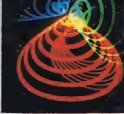




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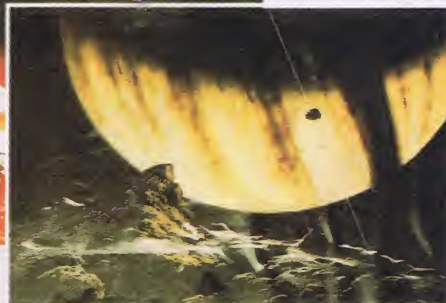
Throughout the pages of the calendar you will find birthdays of space artists and astronomers along with notes on eclipses, phases of the Moon and other important celestial events.

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STARLOG's Space Art Advisor, Ron Miller (author of SPACE ART), has contributed a brief biographical sketch of each artist in addition to the artist's own description of the astronomical scene depicted.

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ON THE COVER: David Egge paints a classic spacesuit-helmeted figure on the surface of Mars—with a twist. Reflected in the helmet are the crystal Martian cities described in Ray Bradbury's *The Martian Chronicles*.

ON THE CONTENTS PAGE: Andrei Sokolov's depiction of a spaceship powered by pulsed explosions as it streaks through the Ring Nebula 1400 light years from our sun.

The Ugliest Orgy

In July President Carter had his say on national TV regarding what our country needs to do in order to create an improved future. Now I'll have my say.

Almost from the first day I began to understand human language and concepts I heard the idea of self-sacrifice. It is extolled by religious leaders, by political leaders, by magazine and newspaper writers, by college professors and even by successful businessmen. Self-sacrifice, they all preach, is the moral ideal—the solution to all our cultural problems.

Listening to the president's "bold new program" I heard again the virtues of self-sacrifice. Repeatedly during his speech we were told to put aside our own self-interest and to sacrifice *for the good of our country*. This would be a *return*, we were told, to the ideals that built America. Our country, according to the president, is based on people putting their own self-interest second.

When the president asks us to sacrifice, he does not mean just to restrict our immediate actions for the sake of our long-range benefits. That's no sacrifice. He means that our *individual* interests are not as important as some kind of vague, general *national* interest.

The president *did* analyze one thing correctly: Our country *is* suffering from multiple crises: financial, technological and spiritual. These are not just bothersome little problems, like gas lines; these are basic, fundamental problems that are eating away at the health of our country—eating away at the energy, motivation and spirit of all the individuals that make our country. That's you and me.

America's ill health, I suggest, is a result of our dedication to self-sacrifice. We have heard it preached so long, and we have tried so hard to practice it, yet we find ourselves with worse and worse problems, and we are told that what we need is *more* self-sacrificing. This is a whirlpool orgy of the ugliest sort.

Let's take a break and look at something healthy.

The stories of immigrants who arrived penniless in New York harbor and proceeded to work and struggle and build and succeed, number in the millions. America is the *home* of the "rags to riches" success story.

What has made this kind of story so common in this country is that, for the first time in the evolution of life on this planet, America held up as a shining ideal, not self-sacrifice, but the *pursuit of happiness*—self-interest.

What created the Industrial Revolution and affected the entire world was the fact that, in America, individuals were allowed to take risks—to fall flat on their face or to climb as high as their ability would take them. This opportunity for self-betterment stimulated people—gave them energy, motivation, high spirits. It created an electric atmosphere of health with exciting prospects for the future.

The *real* challenge that government faces is *not* thinking up new ways to restrict business or ration citizens or restrain free enterprise—the goal should be to unleash all the potential productive energy that exists—to "harness" the tremendous power of American individuals by de-regulating and un-taxing—by setting people free to pursue their own self-interest!

Now that would be a "bold new program." But asking us to step up the orgy of self-sacrifice is at best, naive—and at worse, obscene.

No, Mr. President, it was not self-sacrifice that built our country, and it is not self-sacrifice that will nurse us back to health. Self-interest is the clean energy of the future—the most incredible fuel on the planet—the power that will propel us upward, among the stars.

Kerry O'Quinn/Publisher

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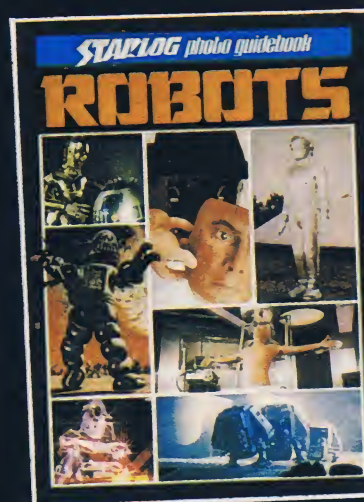
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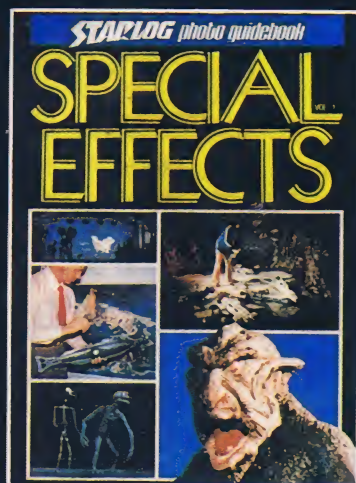
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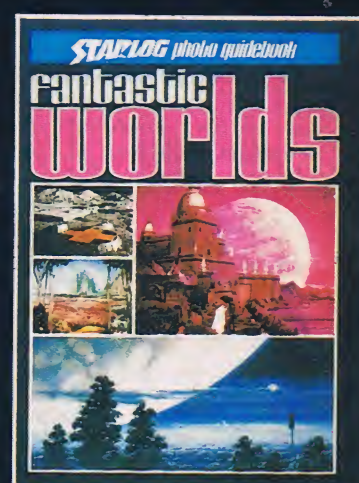
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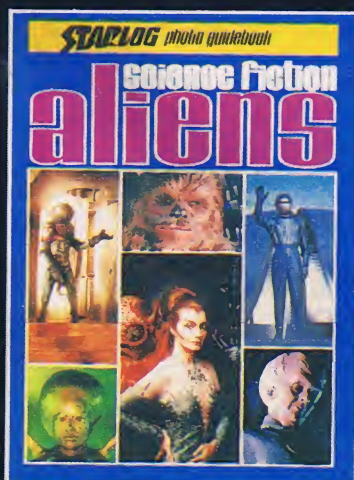
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LULLABY-BYE

... Allow me just a moment to tell you how much I have enjoyed your magazine. I have been a follower of it since its first issue. In light of the fact that yours is a magazine concerned with the future, I have an amusing thought that you might find interesting.

Two days before Skylab's scheduled reentry, I wondered if this event of the present would become part of the folklore of the future; perhaps in the form of the following lullabye:

Rock-a-bye Skylab
So very high
They all did say
You'd stay in the sky
They all were wrong
You came down so fast
And July eleventh
You came home at last.

Steven Showfer
Detroit, MI

MOONING

... FUTURE LIFE #12 was great; a nice mixture of science fact and science fiction media coverage. Although the article inside the magazine on the new James Bond film, *Moonraker*, was great, the cover shot from the film was truly awful. Why the heck would you place such a dizzy movie still on the cover of your fine magazine?

R. Bogaty
New York City, NY
An act of God.

A WHALE OF A COLUMN

... Concerning the column on Greenpeace in FUTURE LIFE #12, I would like to make a few comments.

1. I think that what Greenpeace is doing is great and they should keep saving the seals and whales.
2. Earth's environment is more important than anything and we should do all we can to preserve it.
3. I'm against nuclear energy all together. I think it will destroy our environment totally.

Kevin Hall
Castlewood, VA

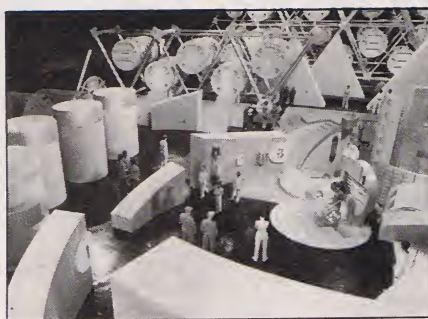
WHO WAS THAT MASKED MAN...?

... In the rather disjointed article on cryonics in FUTURE LIFE #12, the authors mention the trial of one "Captain Crunch," apparently some sort of criminal genius. Who the hell is this mysterious person? Surely not the cartoon cereal salesman! Is this some sort of pseudonym to protect the man's identity, or are the authors merely being facetious? Please explain.

Randy Turnbull
Memphis, TN

"Captain Crunch" is the nickname of a computer genius who made his career crunching numbers with the intent of ripping off Ma Bell. (Ma Bell is the nickname of the telephone company.)

BRAVE NEW WORLD



... In reference to Video Images (FUTURE LIFE #12) about the television mini-series *Brave New World* that is yet to be played on NBC-TV:

I believe the reason that the program keeps being pre-empted is that NBC's programming director Fred Silverman has a dislike for fantasy and science fiction. In the book *Fantastic Television* (Harmony Books, 1977) on page 139, it is said, "... Mr. Silverman had a reputation for disliking fantasy sci-fi shows. ..." If that statement is true, it could explain why NBC-TV gives you a "no comment" on the subject. Fred Silverman's prejudice on science fiction.

It's a good thing Mr. Silverman was not head of NBC-TV programming during the mid-1960s; *Star Trek* never would have got on the air.

Allan David Laska
Richardson, TX

To support your claim, Allan, NBC has just announced that Brave New World will be presented in February 1980, two years after its completion, as a three-hour TV movie. This means that roughly one hour of material has been deleted from the show.

ROCK BY ANY OTHER NAME

... I want to thank you for your interview with Larry Fast, a.k.a. Synergy (FUTURE LIFE #12).

However, I resent your calling his music "rock," even if he himself does so. Electronic music is an art form unlike any other. Such artists as Wendy (formerly Walter) Carlos, Isao Tomita and Mr. Fast do not spew out computerized versions of other types of music. They take the music they are working with, and convert it from classical, rock, or whatever to a type of music whose diversity is limited solely by the imagination of the musician. With a synthesizer, the musician is able to create sounds with much greater meaning and feeling than anything that could be produced on conventional instruments.

If you don't quite understand what I'm trying to say, listen to Wendy Carlos' "Switched-On Bach." For over a decade it has been the most prominent collection of electronic music ever recorded. After you have heard what Ms. Carlos has created (or recreated) from the works of J.S. Bach, you will see exactly what I mean.

If possible, please run more features on the various artists in the field of electronic music. It is about time that a respectable publication like FUTURE LIFE stopped appeasing the kiddies who love to read about the stars of the hear today, gone tomorrow world of pop-rock, and started calling attention to the most artistic form of expression since the poem: electronic music.

Bob Gladstein
Roslyn, NY

WHEN YOU GOTTA GO...

... Concerning your article in FUTURE LIFE #12, "Ice Age or Heat Death," I believe that the Earth will experience both. Coming first, the heat, and then the ice age. Last year I visited the planetarium of the William Penn Memorial Museum in Harrisburg, Pennsylvania, which had an interesting show about the probability of a heat wave and an ice age.

Both would mostly be caused by the sun. Scientists say that the sun will expand and engulf Mercury and Venus and will come close to the Earth. The sun will then decrease in size and diminish completely.

This is not to happen in the near future. Probably not for thousands, maybe even a million years. Although by that time we will most likely have civilizations from Earth in other solar systems and galaxies.

Robert Marzec
McSherrystown, PA

ROCKET BELT GROUNDED

... My curiosity has been aroused greatly by an article you had concerning thruster packs or rocket belts (FUTURE LIFE #11). My fantasy of all time is to own and fly a rocket belt! I simply refuse to believe that none are sold anyway, as you stated in the article. Can you possibly obtain information on where to purchase a rocket belt?

John R. Carter
Pittsburgh, PA

Sorry. According to people at Bell Aerospace Textron, where the belts were developed, there are none on the market at this time.

FLY ON

... In your article "Summertrek" (FUTURE LIFE #11), you mentioned that the Smithsonian Institution's spectacular movie *To Fly* was showing at Minnesota's Omnitheater. This movie is also playing at Marriot's Great America Pictorium in Santa Clara, CA. Pictorium houses the largest indoor movie screen in the world, which is 70 feet high by 95 feet wide and slightly curved.

This giant screen along with a fantastic sound system makes you feel like you are actually in the movie! They even go as far as to spray mist from the ceiling when you are going over Niagara Falls!

Brandon Key
San Francisco, CA

PICKY, PICKY

... I have two bones to pick concerning the story on holography in issue #11.

1. Concerning the lines stating, "The only thing he needed was a source of coherent light, which did not exist at the time" and "Gabor did not actually make the very first hologram." Well, Gabor didn't have a readily available, off-the-shelf coherent light source but he attained a high degree of temporal (i.e. mono-chromaticity) coherence using a high-pressure mercury arc lamp (which he pioneered) emitting sharp spectral lines filtered by light filters along with spatial (i.e. plane wave) coherence by producing a "point-source" image through the use of a microscope objective. Although not as easy to work with and having a very short coherence length, Gabor sure did have a source of coherent light with which he made the first holograms. Crude but nevertheless the first. However, the real

and virtual images on the film were coincident, making viewing difficult. Leith and Upatnieks not only used the laser but solved this coincident image problem using the separate object-reference beam transmission setup that is the standard way of making holograms. I feel this should be straightened out in memory of Dr. Dennis Gabor (he died on February 2 of this year).

2. In the box on "How to Make a Hologram" I think your cost estimates are very generous. A low cost optical bench on which holograms have been and can be made is shown in *How to Build a Low-Cost Laser* by Ronald Benrey. The sandbox design is probably much sturdier and less sensitive to vibration than his copper tubing table but, if you're careful, the tubing table will work (stability can be checked by setting up a Michelson interferometer and watching fringe movement). A laser which will do the job can be had for much cheaper than \$400. Beam splitters can be manufactured with glass microscope slides covered with Scotchint by 3M.

The film is the last critical element but a usable type is Kodak High Contrast Copy Film Type 5069. Its resolution is approximately 630 lines/mm so the maximum angle between the reference and object beams cannot be greater than 25°. Exposure times are long, too, but I have made usable holograms from this. The local photographic supply store quoted a price of \$1.80 per roll of 35mm frames.

Therefore, total system cost can be well under \$2000. (Oh, and a spatial filter/6x beam shaping telescope assembly can also be had from

Metrologic for \$175).

Other than these points, the article was good.

Guy Jackson

Urbana, IL

BOOBY HATCHED

... As I prepare to go to England for EMU's SF Summer Seminar Abroad, I encounter interesting letters in FUTURE LIFE #12.

W.S. Soltis' plea that we not get rid of nuclear power is at once amusing and disturbing. Amusing is his comparison of the Three Mile Island crisis with oil spills, railway tanker spills, and airplane crashes. Disturbing is his indication that, if nuclear accidents became as commonplace as the above, they could be lefthandedly dismissed with as much ease. A genuinely change-ringing China Syndrome or any other accident of levels just below would reach out far past its own immediate area, wreaking economic and bionomic and genetic havoc even through time itself. Question: What oil spill or railway spill or airplane crash occurring 200 miles from Baden, PA ever posed as much danger as would a major nuclear plant accident to that city and its inhabitants? Why does Soltis fail to ask himself just *why* coal still is not a fully developed resource? Why do the much-touted nuclear power plants provide only 15 percent of our energy needs? Could it have something to do with the fact that conventional nuclear plants achieve only *one* percent fuel-to-energy ratio? Does Soltis know any more than he has read or has seen on TV? Does he care? Satis verborum.

Andrew Heugel wants to colonize space a la L-5 and O'Neill. I do not say that such are impossible, merely unlikely. Just where would the energy come from for such enterprises? The financing? The mass amount of mass-drivers to accomplish the assembling of the necessary materials? Why would cities in space be less dirty or less crowded or less enervating than the cities on Earth? Someone near the back just said, "Because they'd have to be!" Okay, wise guy, ask yourself why they don't *have* to be that way right now, right here in River City?

And John Morgan says that we fall dangerously behind the Russians in our space program. Mr. Morgan, name the first Russian who walked on the Moon. Then ask why we aren't falling dangerously behind the Russians in nuclear plants, pollution, or in size of our military appropriations?

FUTURE LIFE remains an interesting publication, despite a tendency to allow booby letters to go unhatched, um, er, uh, I mean, untrounced. This has been a public service announcement from a member of your audience.

Russell Bates

Anadarko, OK

All right, boobies out there...trounce!

FUTURE FACTS

... I would appreciate seeing more detailed, highly (or moderately) technical information on such marvels as the space shuttle, the Viking lander, Voyager, Apollo, and the soon-to-be (or, when this letter arrives, recently) defunct space station Skylab. What you have been doing is fine, and by all means, continue to do it. However, I must say that I was surprised, to say the least, to find that a 1974 *Popular Science* had better technical coverage of the space shuttle than you did! It was the only place, for instance, where I was able to find the maximum calculated G-force on the shuttle's takeoff (4 Gs). If it continues on this way, you may lose a few customers. Thank you for your time, and may Skylab not fall on your establishment.

Grieg Pedersen

Grand Rapids, MI

As our readers may have surmised, Skylab missed our offices by several thousand miles—but thanks for your good wishes. We'd like to stress that FUTURE LIFE is not a technical publication, and therefore will continue to provide the best general overview of future developments without dwelling on heavy technical detail.

LASER INFO

... Twice now in FUTURE LIFE, in issues #11 (Alternate Space) and #12 ("Earthport"), there has been mention of a method by which payloads are launched into space via laser beams. How is this possible?

Randy Turnbull

Memphis, TN

Carolyn Henson answers: Laser rocket propulsion is a means to cheaply ship large numbers of small (about one ton) payloads into orbit.

A conventional rocket burns chemicals in order to heat its exhaust gases. The hotter the exhaust, the faster it blows out the rocket nozzle. By Newton's law, "for every reaction there is an equal and opposite reaction," we can see that the faster the exhaust leaves, the faster it pushes the rocket.

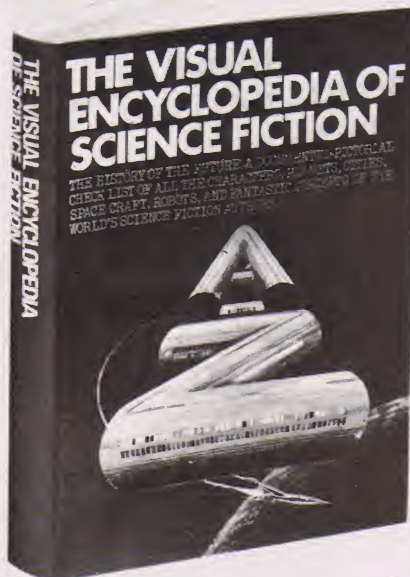
The heat energy available from even the hottest chemical reaction produces an exhaust gas speed of only 4.5 kilometers per second, whereas a laser shining on a vat of water can heat it to steam that

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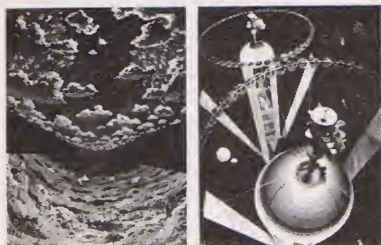
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pushes away at 8 kilometers per second. So we see that a rocket using a tank of water, (heated by a ground-based laser shining into its nozzle,) could lift much more payload than a rocket carrying an equivalent weight of fuel.

Laser rockets have other advantages. The most complicated part of the system is the laser. One laser station could operate hundreds of rockets everyday. These rockets could be produced on an assembly line, like automobiles—only they would be simpler than an automobile. All they need for the engine is a place for the laser to shine in and a place to hold the propellant. Even the steering of this rocket would be done by changing the shape of the laser beam.

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Why haven't we heard much about laser rockets? The problem is that the military controls research on the giant lasers needed to launch these rockets. Any laser big enough to launch a rocket can also cut down airplanes, ICBMs and even satellites and space stations. Will these big lasers continue to be reserved for weapons use? Or will they someday give us cheap space travel—so cheap that scientists believe you could fly to orbit for the cost of a round-the-world airline ticket—about \$2,000? That, friends, is up to us voters who have the final say over how our country is run.

FIGHTING ALS



... In a recent issue of *Time Magazine*, I read an article about 36-year-old Stephen Hawking. Hawking is widely regarded as one of the premier scientific theorists of the 20th century, perhaps an equal of Einstein. His special area of interest is the physics of black holes. He has been confined to a wheelchair for the past eight years, afflicted with a disease called amyotrophic lateral sclerosis. Can you tell me a little more about the disease?

Amy Rankin
Boston, MA

Glad to. Amyotrophic Lateral Sclerosis, or ALS, is more commonly known as Lou Gherig's disease. In 1939, before a crowd of 60,000 fans, Yankee great Gherig stood in the middle of the stadium and bade farewell to his legion of followers. Gherig was already dying of ALS. At that time, the disease was unknown to most people. It attacks the body and kills the victim a piece at a time. The hands and the feet weaken until they can't function at all. The voice begins to fade and swallowing becomes almost impossible. One of the most harrowing aspects of the disease is the fact that the mind always functions, always fights, until the end.

Research on the disease has been minimal, although medical teams have already found out that there are two different types of the disease in the U.S.; Familial, which can afflict members of the same family and, the most common, Sporadic, which can hit anyone. The lone organization trying to find both a cause and cure for the disease is the National ALS Foundation. They conduct research, assist patients, counsel families and educate the public. All tax deductible contributions can be sent to the National ALS Foundation Inc., 185 Madison Avenue, New York, NY 10016.

PASSING THE BUCK

... I will admit to being new to your magazine, but let me state that I've been a staunch Futurian since I saw *Forbidden Planet* at the age of ten. Your future of peace, fulfillment and struggle, as well as total equality for all, is mine as well.

Your article on Larry Fast, in my opinion, was much too technical and not entirely personal enough for fans or readers to know what the artist is all about. In a year of the big budget epic, all star casts, professional directors et al, it's interesting to note that, of the year's four biggest SF/sci-fantasies: *Star Wars*, *CE3K*, *Battlestar Galactica* and *Alien*, none featured an electronic score.

Electronic muzak has come of age and composers such as Fast, Tomita, Gill Melle, Kraftwerk and some progressive jazz musicians who have either contributed experimental or highly electronic effects are deserving of some recognition. If SF cinema is to develop, it should develop properly with: a profound concept, imaginative script, intelligent, open-minded director, competent actors and a romantic/modern score for detail.

My final comment concerns a letter written in *FUTURE LIFE* #12 by Anthony Molla, concerning the Glen Larson/Leslie Stevens refuse passed off as *Buck Rogers*. Mr. Molla was correct in his account of the film, the script, and Gil Gerard's feeble attempts at acting, which did nothing to enhance the Buck Rogers character. Nor is Buster Crabbe's 1939 version of *Buck Rogers* shaken by this "modern" extravaganza! I wondered how the film would handle the original story's racist themes, i.e. Yellow Peril and the nonexistence of Africans/Blacks. This too was handled in the usual Hollywood manner: 1. Ignore the problem, 2. wind-dress everything, and 3. falsify everything and call it "adaptation."

PV2 Don Newsome
Ft. Ord, CA

SPACE MOVEMENT

... I have just finished *FUTURE LIFE* #12, and as usual, it was nothing short of excellent. Congratulations on putting out such a great magazine. So why do I write to you? Because I need your help.

The Input section of #12 started some of the creative gears in my brain to turn out what I think is a really great idea. Joe Rudich is one person, and he managed to get Governor Quie to declare a Space Awareness Day. I have something much larger in mind.

Many of your readers, myself included, are all set to move into space colonies once they are built. But will they ever be built? Colonies need material from the Moon. Moon mining isn't possible till the shuttle is a success. The shuttle isn't a success if there is no money for NASA. Here is where I need your help.

NASA's budget is controlled by the government, made up of senators and representatives. If there

were some way to get them to allocate more money to the space program everything would be set, but how? Try a massive letter campaign. Phone calls, lobbying, sky-writing, the works. If all of FUTURE LIFE's readers would pick one week in which they would all, in an *organized* fashion, do this, I think we could get NASA and the shuttle the money they need. If these senators and representatives also knew that we are voting for those officials that support the space program, I think they might become open minded about space (no pun intended).

Where do you fit in? I need you for three things. First, inform your readers. Tell them who is for space, and who isn't. Tell them that a space lobby can be formed. If you would get other groups to help the cause, that would be even more wonderful. Carolyn Henson, the L-5 Society and L-5 News working with FUTURE LIFE would be an unbeatable team. Where is Gerry O'Neill?

The second reason I need you is because you have the information we need to inform the senators and representatives. Let them learn about space the same way we did, through the pages of your wonderful magazine. Buying back issues to send to someone you don't really know can seem like a real drain on the wallet, though. That is why I ask you to let us copy the articles on SPSs, space colonies, the mass driver, and anything else of significant value to help our cause. I realize that this could be a real legal hassle for you, but it would really help things if we could send first-hand information along with our letters. In this case the saying should go: "Reading is believing."

The third, and final, reason I ask for your help was stated earlier. We need organization. Your magazines are something that we look up to. I look to you as a leader, because you have made me aware that there are other people out there who share the same dream as me. The dream of space. I ask you to give us the helpful hints of how to write informative, and mildly threatening, letters. I look to you for permission to go to the library, the post office, or wherever we work and copy those articles, so we can inform the people who spend our tax money. I look up to you to name that date. I suggest a week before the shuttle lifts off on its maiden voyage. I look up to you for so much, I've got a sore neck. What do you say? I've used every method of propaganda, emotionalism and advertising slander that I learned in Language Study to convince you to help me. I leave the decision to you. Do you want leadership?

Dana L. Cadman
Midland, MI

Well, we don't really have the time or manpower to lead the nation into space from this office, but you've got our permission to photocopy any of our articles which you think may help to convince people that getting off the planet is crucial to our future. About the L-5 Society... Carolyn?

IN SEARCH OF KARMA

... It's rather interesting to see readers endorsing presidential candidates in FUTURE LIFE. I am referring to Willie West's letter in FUTURE LIFE #12, urging science fiction fans to support Jerry Brown's campaign, since "he supports the space program, solar energy and saving the environment." Well, those are nice ideas to support; however, ideas are oft times rather difficult to animate; Jimmy Carter's pre-election plans are a flagrant example of this. Nothing against Gov. Brown, but supporting space exploration, solar energy and ecology doth not (wholly) a president

make. Mr. West is perhaps acting a bit naively in believing (seemingly) that solely the support of the above makes a good leader for the entire country.

Agreeing with Jeffrey Gritz's letter, yes, it *would* be nice to know exactly how candidates feel concerning the space program/space exploration; however, once again, that shouldn't be one's sole basis for pulling a lever in a voting booth.

Ellen J. Rawson
Milmont Park, PA

INFINITE HORIZONS

... I have enclosed a copy of the governor of Iowa's proclamation naming this July 20th as "Space Day." It was the efforts of FUTURE LIFE and organizations such as the L-5 Society that

spurred myself and the others present at the ceremony to write the governor and persuade him to issue this proclamation.

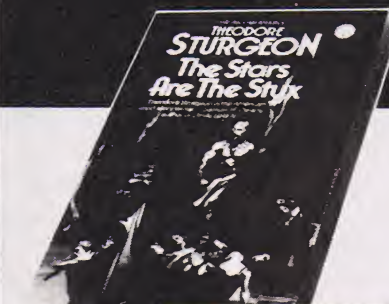
It was a most gratifying ceremony that combined the pride of the remembrance of the first lunar landing along with the pride of being part of the ceremony itself. But this is merely a first step in making the public and the politicians aware of the infinite possibilities and potential of our future outside the Earthly environment. The ceremony resulted in preliminary plans to organize a space activist group in Iowa among the invitees.

I wish to thank FUTURE LIFE for its part in spurring us on. Infinite horizons is a goal worth fighting for.

Matthew B. Hickman
West Des Moines, IA

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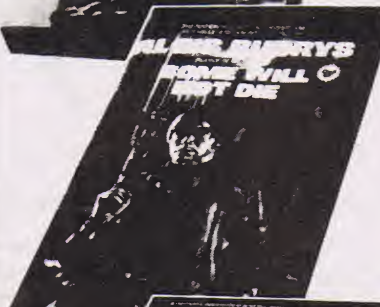


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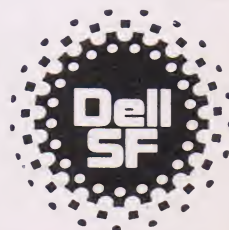
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INTENTIONAL HUMOR

AMERICATHON: IT ONLY LAUGHS WHEN YOU HURT



Vietnamese Punk rocker Mouling Jackson (Zane Busby) and her punkettes.



Harvey Korman as Monty Rushmore, the host of the Americathon.

Just about everyone will admit that, these days, the United States is in pretty sad shape. Hampered by economic, energy and employment problems, America, more often than not, finds its back against the wall in terms of global affairs. Filmmaker Neil Israel, however, thinks that there is a bright, albeit off-the-wall, future ahead for the U.S.A. and expresses that belief in his new film, *Americathon*.

Taking place in 1998, *Americathon* portrays a country enmeshed in the logical extensions of today's torpid fads and troubles. Two decades from now, a world exists without the use of fuel and energy as we know it today. People use bicycles and rollerskates to commute. Automobiles no longer putter about on the nation's highways and are used, instead, as living quarters in non-mobile home parks.

War is almost non-existent. Not only do the Jews and Arabs live peacefully, but they've united to form the United Hebrab Republic. China operates an international

chain of fast-food restaurants called Chang Kai Chef.

On the home front, the nation has banned cigarettes, caviar and champagne. The President of the United States is a mellow guy, a former sensitivity awareness trainee named Chet Roosevelt. He lives in a condominium in Marina Del Rey with his old lady, a waterbed and the Presidential insignia. The White House, meanwhile, is used by the Teamsters as union headquarters.

In the midst of all these good vibes, America suddenly finds itself nearly broke. During an era when the world population dresses in jogging clothes, American Indian tycoon Sam Birdwater, a running shoes and jogging suit manufacturer who has lent the United States government vast sums of money, threatens foreclosure on the country if the debt isn't paid within 30 days.

Thus arises the Americathon, a telethon held to raise money for America. Hosted by fading film star Monty Rushmore and featuring guest appearances by car-killer Oklahoma

Roy Budnitz, Vietnamese punk rock star Mouling Jackson and cross-country skateboarder Chris Broder, the Americathon represents America's last chance to remain a world power.

"Uncle Sam needs you... pass the hat for America" becomes the national motto.

As crazy as the film sounds, it was (please turn to page 14)



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(continued from page 11)

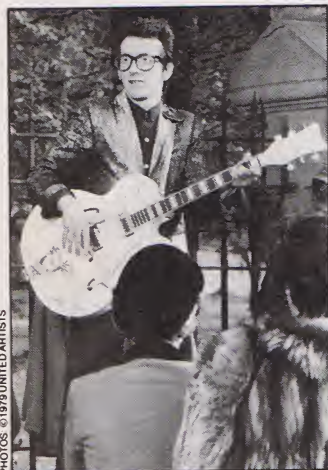
actually based on a semi-factual situation. The movie had its origins three years ago in the joint comedic genius of former Firesign Theater members Phil Procter and Peter Bergman. Impressed with New York City's financial problems, they envisioned a comedy routine entitled "Gothamthon"; a Big Apple telethon. Friend and filmmaker Israel, fresh from the success of *Tunnel-vision*, encouraged them to develop it as a film. Monica Johnson was then brought in to amplify the initial screenplay. Featured in the finished freneticism are Harvey Korman, John Ritter, Peter Riegert, Dick Schall, Fred Willard, Nancy Morgan, Zane

Buzby, Chief Dan George, Meat Loaf, Elvis Costello, Howard Hesseman, Procter and Bergman, Peter Marshall, 4-year-old Baby Irene and *Playboy's* August 1979 Playmate Dorothy Straten.

In Israel's mind, *Americathon* is the first film since *Dr. Strangelove* to allow the country to look at its problems and, hopefully, solve them while laughing all the way. He does admit, however, that his grandiose cinematic vision was designed within the boundaries of tasteful economic limits. "*Americathon*," he states, "was written with the intention of using as few sets as possible."

Pass the hat for *Americathon*.

—Ed Naha



Elvis Costello raises funds.

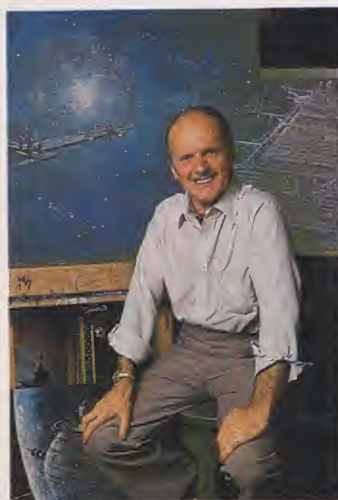


Harvey Korman and Meat Loaf.

RETROSPECTIVE

ELLENSHAW IN MUSEUM EXHIBIT

Special effects artist Peter Ellenshaw, whose latest work can be seen in Walt Disney Productions' new space adventure epic *The Black*



Ellenshaw with *Black Hole* art.

Hole, is now the subject of a special gallery exhibition and film retrospective at New York City's Museum of Modern Art. The exhibit, which opens September 17, will cover Ellenshaw's 45 years in the film industry as matte painter, production designer and director of special effects.

Beginning with the 1934 British SF film *Things to Come*, Ellenshaw made his name as a top-flight special effects creator with such motion pictures as *Thief of Bagdad*, *Treasure Island*, *20,000 Leagues Under The Sea*, and his Oscar-winning work on *Mary Poppins*. The exhibit will illustrate his career with his conceptual drawings, matte paintings, stills and film clips, plus a 16-weekend film retrospective beginning September 22. Ellenshaw, pictured here with several of the *Black Hole* matte paintings appearing in the exhibit, will make a special appearance as guest lecturer at the show's opening.

—Barbara Krasnoff

FOREIGN FUTURISM

FANTASTIC POSTERS FROM BRITAIN



The British Isles are apparently swarming with top-rate fantasy, science fiction and futuristic artists—although it's not always easy to find reproductions of their work on this side of the Atlantic. The situation is now being remedied through the efforts of Big O, a British publishing house which specializes in purveying the cosmic vistas and fantastic creatures concocted by England's best, including Roger Dean, Rodney Matthews, Jim Burns and others. Shown here are Rodney Matthews' "Last Armada" (top), and Jim Burns' "Robot Lineup." Big O's stateside outpost (Box 6186, Charlottesville, VA 22906) will be glad to send sample broadsheets of their fantastic art poster line (send one dollar), so you can make the difficult choice of which high quality, full-size poster would look best on your boring wall.

—Natalie Millar



MEDICINE

NO MORE FOUR-EYES?

Tired of being called "four-eyes"? Well, that expression may soon become as obsolete as the eyeglasses they call attention to, according to Soviet surgeon Svyatoslav N. Fyodorov. Claiming that glasses will one day end up as museum pieces and collector's items, Fyodorov, director of the Moscow Research Laboratory of Experimental and Clinical Problems of Eye Surgery, calls them an "unnecessary inconvenience" and asserts that it seems only natural that ways be found to correct optical dysfunctions.

For starters, Fyodorov's solution

is a "simple" five to ten minute operation that he claims can eliminate the need for eyeglasses or contact lenses for many people suffering from myopia, or near-sightedness. He is also optimistic about the use of plastic lens implants for people who have cataract problems.

The doctor's solution is under scrutiny by the U.S. National Institute of Health, which wants to investigate any possible long-term adverse effects of the Russian technique, which is based on pioneering Japanese work. Additionally, American doctors, well aware of the rising furor over medical costs, are questioning the value of the surgery when eyeglasses and contact lenses correct near-sightedness so easily...and, presumably, cheaper.

—Philip L. Harrison

WHERE ARE THEY?

SCIENTISTS RENEW SEARCH FOR EXTRATERRESTRIAL LIFE

Over 200 scientists and other experts debated the question of life beyond the Earth at NASA's Ames Research Center in California on May 19 and 20. The Conference on Life in the Universe was the largest scientific meeting to date on this once exotic subject.

This meeting appears to have been the opening shot in a new NASA campaign to broaden the base of support for a government-sponsored search for extraterrestrial life and in-

telligence. While the Viking landers already have looked for evidence of life on Mars, NASA's proposed effort to begin listening for radio signals from other civilizations was rejected by Congressional appropriations committees in 1979 and received Senator Proxmire's "Golden Fleece" award.

After a positive, supportive introduction by NASA administrator Robert Frosch, conference attendees discussed the evolution of the cos-

mos, organic chemicals, the biosphere, and Earth's continents. Harvard University's Eric Chaisson said that technological intelligent life is the second most important transformation in the history of the universe, after the origin of matter. David Black of NASA Ames described the planets as cosmic Petri dishes where life may evolve.

Speakers looked at many aspects of the only examples of life and intelligence we know—those on the Earth—including the development of the nervous system, the human brain, and tool-making. Others discussed the influence of astrophysical events such as exploding stars on the evolution of life, and the prospects for detecting planets near other stars. Simon Worden of Sacramento Peak Observatory said that finding extrasolar planets will drive the next century's space program.

Stanford radio astronomer Ronald Bracewell, author of *The Galactic Club*, discussed different ways other civilizations might reveal themselves to us, including sending interstellar probes. Woodruff Sullivan of the University of Washington described how the Earth would look to aliens searching with radio telescopes—1,000 times brighter than the sun at UHF wavelengths. The U.S. BMEWS radar could be detected 30



A space-based SETI antenna.

light years away by a civilization with a radio telescope like the one at Arecibo, Puerto Rico.

Officials at NASA Ames and the Jet Propulsion Laboratory described their plans for an initial search for radio signals. Using existing radio telescopes equipped with sophisticated signal analyzers, the NASA project would include both an all-sky survey and a more sensitive targeted search aimed at selected nearby stars. The goal is to start in fiscal year 1982.

The conference closed with reflections by Philip Morrison of M.I.T., one of the two physicists who first proposed a search with radio telescopes in 1959. The proceedings of the conference will be published by NASA. —Michael A. G. Michaud

NUTS & BOLTS

SATURN 3: MECHANICAL MENAGE A TROIS

Is the world ready for a love-starved robot? ITC Entertainment thinks so and, to prove its point, will unveil Hector the robotic romancer in *Saturn 3*, a science fiction thriller planned for Christmas release. *Saturn 3* concerns the attempts of scientists Adam (Kirk Douglas) and Alex (Farrah Fawcett-Majors) to live the idyllic life in their subterranean research station on Saturn's moon, Titan. Their peaceful existence is shattered by the arrival of the dapper and quite psychotic Captain James (Harvey Keitel), an expert on robotics and facial twitches.

James is there to monitor Adam and Alex's hydroponics research and curtly informs them they are behind

schedule. In between heavy bursts of breathing aimed Alex's way, James states that he is going to build them a robot "helper," Hector, the first of the Demi-God series. Overriding the two scientists' protests that they already have three useless robots, James sets out to construct Hector. He also sets out to woo (as in woo?) Alex away from Adam.

He attempts to tempt her with samples of psychedelic Earth delights, such as "Blue Dreamers" and "Ear-thies." Adam is understandably annoyed that Alex is interested in such illegal drugs but consents, nonetheless, to take a Blue Dreamer trip with his true love. Alas, a bumner arises and the twosome hallucinate about doing James in.

James, meanwhile, via a handy plug socket in the back of his head, programs mighty Hector. Unfortunately, Hector picks up *all* of James' inner feelings, including those concerning the Captain's "crush" on Alex. Soon, Hector has a bona fide crush on the lovely lass and goes about proving his love by crushing everything in sight. Before too long, Alex is torn, almost literally, between two lovers: James and Hector. Adam watches helplessly as the two meanies battle for his lady. Alex reacts by changing her hair style from the natural look to Afro-fright. As Hector fights James in an attempt to dismember the good old days, Adam takes Alex by the hand and, donning space suits, they attempt to flee the station.

But Hector has other plans! Produced and directed by Stanley Donen, from a screenplay by Martin Amis based on a story by the late John Barry, *Saturn 3* promises to be the first psycho-gothic-romance-space adventure ever filmed. All this from the company who brought the world *The Muppet Movie!* —Charles Bogle

DEBUNKING

KIRLIAN AURA FADES

Proponents of Kirlian photography claim it shows the human "aura" or psychic energy, but researchers at the Psychical Research Foundation (PRF) on the campus of Duke University, Durham, North Carolina, believe it is caused by physical, not psychic phenomena.

Invented by Semyon and Valentina Kirlian in the Soviet Union during the 1940s, this method of photography does not require a camera. A high-frequency spark generator is used to produce images of objects placed directly on film. The aura-like images which result caused considerable stir when Kirlian was introduced in the U.S. by journalists Sheila Ostrander and Lynn Schroeder in their book, *Psychic Discoveries Behind the Iron Curtain*.

"Here was something that looked like an aura," says PRF project director and parapsychologist W.G. Roll, "something you could see, in colors, and it could be reproduced under laboratory conditions. So, there was a

lot of enthusiasm.

"I thought at the time, perhaps this is one of the things we're looking for." The PRF was established to investigate the "survival" question—does something survive man's death? "But the results were," Roll says, "that Kirlian photography evaporated into perspiration... literally."

When the effect was studied under controlled laboratory conditions, he said, it was found to be nothing more than a common physical phenomenon called electrical corona. The effect is caused by intermittent ionization of the air surrounding a conductor when voltage levels exceed a certain critical value. This causes the conductor to glow.

The same effect is responsible for St. Elmo's Fire, can cause static in radio and TV receivers, and according to one researcher, can make swarms of insects light up at night, leading to their being mistaken for UFOs ("You Light Up My Night," Databank, FUTURE LIFE #11).

Although Roll admits he would have preferred positive results, "It's important to show when a claimed phenomenon does not exist," he says. "This clears the air and lets researchers move on to more promising areas." —Allan Maurer



PHOTO © 1979 ASSOCIATED FILMS

SOVIET SERPENT

MOVE OVER NESSIE

Hunters, geologists and reindeer herders have reported seeing a "long-necked, snake-headed creature" in the icy waters of Siberia's Lake Labinkir, according to a best-selling book in the Soviet Union.

Soviet author Anatoly Pankov relates numerous sightings of the creature, which bears a striking resemblance to Scotland's Loch Ness monster, in his book, *The Oymyakonsky Meridian*, a profile of the world's coldest region. A group of geologists saw the creature rise from the lake in the 1950s, Pankov says, and watched it glide across the water, "cry out like a child," and dive back into the 150-foot depths.

Reindeer herders told Pankov they saw the creature poke its jaws through the surface of the lake, snatch a low-flying bird from the air and slip away.

One Siberian hunter said he shot a goose and sent his dog to retrieve it when the monster shot from the water and swallowed both the dog and goose in a gulp. The hunter made a fire on shore, tossed flaming coals onto an animal skin and shoved them onto the lake ice. Again the creature swooped up and swallowed the skin. Then suddenly it rose again, screeching in pain from the hot coals.

Although expeditions which used divers and underwater photographers to search for the creature failed to document its existence, some biologists speculate it may be a surviving descendant of the aquatic dinosaurs that used to swim Siberian waters. Other scientists say it might be a northern pike; an aggressive, carnivorous fish that grows to a length of nine feet and has been known to attack canoes.

For a hundred years, Pankov says, residents of the area have warned travelers not to cross the lake by canoe. —Allan Maurer

ASTRONOMY

NEW EYES ON THE SKY

A revolutionary telescope design that heralds the beginning of a new era in astronomy was dedicated



on May 9th on Mount Hopkins, Arizona. Known as the Multi-Mirror Telescope (MMT), this unique facility utilizes six 72-inch mirrors on a single mount coupled with a laser-aligning "active optics system" that mimicks the function of the human eye-brain in bringing the separate images into one focus.

The third largest telescope in the world, the MMT has broad implications for the future of astronomy.

Though some astronomers had conceded only a few months ago that the Russian 236-inch would be the largest ground-based optical telescope ever constructed, plans are already under way for the University of California to construct a 400-inch telescope using some of the MMT techniques. Also in the planning stage is a "gang-ing up" of seven of these mirrors for a

The University of Arizona's multi-mirror telescope. Laser guided optics may soon make it possible for us to see planetary systems of our stellar neighbors.

telescope with an equivalent diameter of 1,000 inches.

The capabilities of such an instrument? Astronomers working on the NGT (New Generation Telescope) concept at Kitt Peak National Observatory claim that, among other things heavenly, such an instrument would be capable of direct visual observation of other planetary systems of nearby stars.

—Philip L. Harrison

SFX

STAR WARS SECRETS

Since the phenomenal success of such eye-boggling science fiction films as *Star Wars* and *Close Encounters*, special effects artists have moved into the limelight. Two of the wizards who are riding the crest of the SFX wave, Jamie Shourt and Robert Blalack, have packaged their experience and expertise into a highly entertaining multi-media program and taken it on the road.

"Movie Magic—The Special Effects of *Star Wars* and Beyond" explores how modern technology has altered the face of cinematic effects, and details some of the process of creating laser battles and faster-than-light travel. Shourt, who won an Oscar for his *Star Wars* visual effects

and also worked with Doug Trumbull on *Andromeda Strain*, and Blalack, who designed and built the *Star Wars* explosion sequencers and fabricated many of the models, are well-equipped to provide an enlightening excursion into this fascinating field. The program includes slides and film segments from *Star Wars*, plus behind-the-scenes looks at the SFX technicians at work. The program can be tailored to a range of age groups and technical proficiencies.

For information on booking Shourt and Blalack's Movie Magic road show, contact Future Presentations, 1000 Westmount Dr., Suite 128, Los Angeles, CA 90069. Phone (213) 652-3039.



Shourt (left) and Blalack reveal SFX secrets in a multi-media show.

TECHNOLOGY

COMMUNICATOR FOR THE HANDICAPPED

Star Trek fans will, no doubt, recall the award-winning episode, "The Menagerie," wherein former *Enterprise* Captain Christopher Pike, brutally crippled and deformed by an accident, was confined to a wheelchair and relegated forever to communicating with the rest of the world via simple yes-no signals.

The condition that Captain Pike found himself in is not unique to the 23rd century, nor is a starship accident its only cause. In our world of the 20th century, Holly Waite of Glendale, Arizona had similar problems. Stricken by cerebral palsy, the 11-year-old could only communicate by hitting her head against two pads attached to her wheelchair simply labeled "yes" and "no".

But no more. In an application of technology unforeseen by *Star Trek*'s writers, a communications board has been developed which now enables the severely handicapped to communicate. Developed by 31-year-old electrical engineer Dan Irick over a

period of five years, the device consists of a board with letters and numbers, a typewriter, and a video camera and TV screen.

A light travels up and down the board and, when it reaches the desired letter or number, a switch is hit by the user and the corresponding letter is typed out on the typewriter. The camera picks up the image and transfers it to the television so the user can see what is being printed.



The system as it now stands is, by Irick's admission, impractical and costly (around \$3,000). He hopes to have a new, less costly and more marketable prototype available within the year. —Philip Harrison

VIDEO

ATLAS SHRUGGED OFF TV

Atlas Shrugged, the proposed television mini-series based on the futuristic novel by Ayn Rand, may surface within the next few years in theaters across the country instead of on TV. According to producer Michael Jaffe, NBC-TV, the network initially committed to the production, has become exceedingly uninterested in Rand's work.

NBC expressed a desire to air *Atlas Shrugged* late last year when Jaffe suggested the idea to Paul Klein, then in charge of programming for the network. Jaffe subsequently commissioned Stirling Silliphant (*The Towering Inferno*) to pen an outline and one-third of the script. Silliphant finished his treatment and a script for the first two-hour installment in record time. In the interim, however, Fred Silverman took over as president of NBC and expressed a good deal of disdain towards the station's mini-series projects. A four-hour version of *Brave New World* was shelved twice and *Atlas Shrugged* came in for a good deal of corporate criticism.

According to Jaffe, the pro-individualism, anti-government work was deemed "too heavy with philosophy" by a Silverman programming exec. "There's very little subplot," the nameless exec continued.

"The characters are too black and white... There's no texture... The audience would have trouble relating to the people in the story... The theme would be way above the head of the average TV viewer."

Leaving NBC with the idea, Jaffe then went to ABC. ABC, in turn, nixed Rand's story, saying that it "made people think too much." Jaffe is now considering three possibilities for the epic story. The first involves turning the mini-series into a four-hour, \$10 million theatrical release; funded entirely by "private investors who are devotees of Ayn Rand."

The second possibility entails Jaffe getting his attorney to draw up a prospectus and then register it with the Securities & Exchange Commission for public solicitation of the money needed for the theatrical release. In this manner, *Atlas Shrugged* would become the first big budgeted movie offered to the public in a stock sale.

Possibility number three would involve Jaffe offering the mini-series in ten-hour form to the syndicated Operation Prime Time network. Jaffe, against all odds, is determined to bring *Atlas Shrugged* to the screen; either big or small screen will do. His reasoning? He insists that he really believes in the book's philosophical message. But, perhaps even more telling, is his desire to secure a longer working arrangement with Rand herself. "I'm enamored of Miss Rand," he says. "She's one of the most charming and intelligent women I've ever met." —Charles Bogle



PICK-A-DISASTER

MORE CATASTROPHES TO WORRY ABOUT

So you've survived Skylab, and now you think you're safe, right? Wrong! According to an article in the *New York Times*, scientists say there are seven possible major disasters that could result in the complete annihilation of the human race. Therefore, if you've run out of nightmare material, here are a few little items guaranteed to send you back under the covers:

1. Collision with any sizeable asteroid or comet. Anything a few miles in diameter will do. Remember *When Worlds Collide*?

2. A nearby supernova. According to the *Space Futures Newsletter*, if a supernova occurred less than 60 light years from here, it would effectively wipe us out within minutes. Of course, we'd be treated to one hell of a light show first.

3. Excessive solar radiation from a change in the geomagnetic field which protects us from the more dangerous of the sun's rays. A short while ago, it was theorized that the chlorofluorocarbons emitted from spray cans were slowly destroying Earth's ozone layer, which would lead to much the same situation. Of course, you could still go for a walk in the fresh air—as long as you wore your lead suit.

4. A change in the level of CO₂.

This would initiate the infamous Greenhouse Effect—more CO₂ in the air would mean more infra-red heat waves trapped in Earth's atmosphere. The end result? Sunbathing on the beaches of the South Pole.

5. Epidemics. Or rather, pandemics. After all, Mother Nature is extremely adaptable, not to mention resourceful, and we shouldn't assume that a few new medications will stop her. A new strain of VD has already appeared which practically thrives on penicillin. Black plague, anyone?

6. Geomagnetic reversal. In other words, our magnetic poles would reverse themselves, causing massive upheavals in the Earth's crust. Don't snicker—this is known to have happened several times, the last occurrence estimated at about 30,000 years ago. It could happen again.

7. Last, but certainly not least, nuclear holocaust. Have you thought lately about whose fingers are on those buttons?

And if all this isn't enough to curl your toes, there is always an abundance of minor catastrophes to keep your mind occupied: war, population explosions, the energy crisis, the new TV season... any preferences?

—Barbara Krasnoff



DISCOVERY

JOVIAN RINGS

Voyager 2 photographed Jupiter's rings from a distance of 1.5 million kilometers. The ring may extend all the way to Jupiter's cloud tops.

PRIME TIME DNA

TV'S GENETIC MONSTER

This fall, CBS-TV will present a two-hour telefilm based on current day DNA genetic research tentatively titled *The Henderson Monster*. Directed by Waris Hussain

and written by Ernest Kinoy, the film stars Jason Miller, Christine Lahti, Stephen Collins, David Spielberg, Larry Gates and Nehemiah Persoff.

"It's not a science fiction film, really," says Stephen Collins, who later this year will star in *Star Trek—The Motion Picture*, "and it's not a horror movie, either. It's a movie about molecular genetics, about the people who are currently working with recombinant DNA research. This whole genetics area [see FUTURE LIFE

#13] is becoming a national issue. The movie raises the question of just how far can one go in this field: Should there be some sort of imposed regulation? How safe are these experiments? Are scientists tinkering with evolution in creating new forms of life and setting them free in the environment where they can, in turn, affect other forms of life which have naturally evolved? Jason Miller is the scientist whose work, trying to create new life forms in a laboratory, causes

a controversy. It's a good script, too. Considering the rather dense subject matter, it's one of the wittiest and most lovingly constructed pieces I've ever seen on TV. It's thought-provoking, but entertaining, too. All the characters have warts, if you know what I mean. They're all a bit off-center, incredibly colorful."

Executive producers of *The Henderson Monster* are Herbert Brodtkin and Robert Berger.

—Ed Naha

The Martian Chronicles

Bradbury's poetic classic makes the difficult transition to television

By ED NAHA

It was a time unlike all others. A time of dying dreams and awakening nightmares. It was a decade fraught with genocide, mass destruction and the specter of nuclear devastation. Yet, above all, it was a time of almost childlike hope. It was the 1940s and it was during that decade that Ray Bradbury wrote a series of short stories that, one day, would be woven into the science fiction classic *The Martian Chronicles*.

Published in 1950, *The Chronicles* was a dizzying collection of plot lines and characters; a sprawling story tracing the United States' first three missions to the red planet. Poetic in both style and nature, *The Chronicles* begins in January 1999 when the first expedition is launched. Telepathically traced by Martian maiden Ylla and misunderstood by her husband, Mr. K, the first excursion ends in tragedy. The second attempt, led by Captain Black, also meets with a mysterious end. The third mission, led by Colonel Wilder, leads to a touching confrontation between the two worlds and two races and ends with the Martian race nearly disappearing from the face of their planet, while the remnants of a ravaged planet Earth struggle to rebuild the human race on Mars.

The ethereal quality of the book's imagery has eluded filmmakers for years. Author Bradbury, no great fan of Hollywood's approach to literature, has guarded his work for nearly three decades. Yet, this fall, NBC will include in its season a three-part, six-hour mini-series: *The Martian Chronicles*. What happened to change Bradbury's mind about filming his work?

Firmly ensconced in his California office, Bradbury replies with a faint smile and a shrug. "I realized that I'm going to be dead in a couple of years and I'd really like to see this thing come to life. I thought it would be nice to take the big chance right about now."

Launching The Martian Chronicles

Three years ago, Charles Fries Productions decided to bring *The Martian Chronicles* to TV. It was a big risk and they knew it. Aside from the popularity of *Star Trek* re-runs, science fiction *per se* has never appealed to the TV audience in a big way. Yet, producer Charles Fries was determined to create a science fiction show that would be both a popular and a literate event. "I was con-

vinced that our title and the level of this program would generate an audience," he says from his West Coast headquarters. "*The Martian Chronicles* was never intended to be *Battlestar Galactica*. That sort of stuff is really comic bookish like Buck Rogers. Our picture was intended to be much more philosophical, closer in spirit to *Close Encounters*. It stands as a sociological concept piece with hardware and science fiction involved. Should we settle on Mars? Should we colonize another planet? Will the nature of Man ever change?"

Fries' production company joined forces with Richard Berg's Stonehenge Productions to jointly launch the ambitious \$7 million TV epic. NBC picked up the show in October of 1977. Additional financing came from England's BBC Television and the German-based Polytel. John Stears, of *Star Wars* fame, was put in charge of special effects. Richard (*I Am Legend*) Matheson was given the task of scripting. Michael (*Logan's Run*) Anderson was signed to direct. Rock Hudson, Nicholas Hammond, Barry Morse, Roddy McDowell, Darren McGavin, Maria Schell and Fritz Weaver were designated as the stars. On September 18, 1978, photography began on the island of Malta and both the cast and crew quickly learned that writing about the wonders of an imaginary Mars was one thing and filming them quite another.

Mars On Malta

"I had sincere doubts that we were going to get this done," says associate producer Charles M. Fries. "The fact that we finished this is a tribute to our crew. They were the best. It was a monumental undertaking. Reading *The Martian Chronicles* is a delightful experience but transferring the printed word to film proved to be quite a headache."

Fries, Michael Anderson and the crew discovered that what was covered in the book with a few sparse lines of description had to be painstakingly constructed for the benefit of the camera. And so, the ambiguously described Earth colonists' dwellings and the deserted Martian cities turned out to be quite a challenge to visualize.

"Our Earth dwellings on Mars," says Fries, "were designed by Ashton Gorton, our art director. He made them totally modular, constructing them from basic units transported from Earth. Consequently, each Earth col-

onist's dwelling has a consistent look to it. It's a logical extension of present day technology. It looks like something that would be possible in the year 2000 as opposed to the things in *Star Wars* or something like that.

"The Martian cities were also Ashton's brainchild. He tried to develop a geometry for the cities that was simple, elegant, and yet, not really in the realm of our experience. When you think about it, that's a nearly impossible task. He came up with these pillar and circular shapes to design the ruins."

Once designed, parts of the cities had to be built, full-scale, on Malta. "We started with the basic rigging, then wood to cover the rigging and create a foundation upon which to build. We used plaster and cement and a form of styrofoam to build the pillars, and plastic to give the globes a smooth look. We had over 50 construction people shipped in from England to build these things and, when we were going full-steam, we hired 200 additional Maltese as well. We managed to get Mars constructed on Malta in time for shooting but it wasn't all that easy. Malta has a very mild climate, but during the months of September and October it was pretty rain-soaked for a supposedly arid planet."

With Mars now in existence on Malta, only one more task was left to the filmmakers... bringing Martians to Mars.

How To Make a Martian

"Our biggest problem with the Martians," says special effects expert John Stears, "was how to make them look elegant and proud without looking comical. They are an extremely civilized people. We finally achieved this by a unique process of eye cosmetics and carefully sculptured heads and basically simple Grecian-type costumes."

"We're all very happy with our finished Martians," echoes director Anderson, "but it was touch-and-go for quite a while. We wanted to create a Martian that was not a surrealist blob of jelly or a funny pseudo-Roman centurian with cross-straps at the knees. We wanted them to be slightly different, yet recognizable. They played dramatic parts. They had to speak and be understood. We've created Martians that are an extension of what Bradbury felt on the printed page."

Right: A majestic, masked Martian. The TV Martians were difficult to create. They had to be alien without being horrific.





ALL PHOTOS © 1979 NBC



Above: Col. John Wilder (Rock Hudson, far right) leads his men across Mars. Above left: Parkhill (Darren McGavin) and memorabilia. Left: Peregrine (Fritz Weaver) in his church.



"We used normal human actors for the roles but gave them a slightly different look. They have golden eyes because Bradbury wrote that the Martians are the Golden People with golden skin. The problem with our finished Martians was that they looked so wonderful, we had to protect them from reporters and the like. We tried to keep them a secret. We made them up and rushed them onto the set when no one was looking and, then, when they were finished, rushed them off. It was almost slapstick. It was worth it, however. On the screen, they look totally convincing."

One of the humans totally convinced by the Martians' appearance was young actor Nicholas Hammond, best known for his role



as TV's Spiderman. In *The Chronicles*, he plays Captain Black, leader of the second expedition. "Those guys really do look like Martians," he laughs. "They don't look like Godzilla or something out of a Japanese horror movie. They look like a mutant form of a creature that, millions of years ago, might have sprung from the same ancestry as human beings. They resemble humans that have been transformed into something else because of a different atmosphere, gravity and terrain."

Director Anderson concedes that, although the finished makeup *looks* marvelous, it did present some unique problems for the cast and crew to cope with. "Those golden eyes," he moans. "It was very hard for us to get the magical golden effect we wanted. Normal contact lenses wouldn't do since the eyes had to be pure gold. We had to have special lenses designed which were very hard on the actors involved. They could only wear them for a few minutes at a time. Then,

they'd have to take them out and we'd wait two or three hours before they could be put back in again. It was fairly difficult to work around. And, for the actors, it was incredibly challenging. While wearing all this makeup

they had to simultaneously learn how to move slightly differently and react slightly differently than the *human* actors. Yet, in spite of all the rigors, the final effect is quite beautiful."

(continued on page 42)

The Martian Chronicles Cast & Credits

THE MARTIAN CHRONICLES: 1979 NBC-TV. Executive Producers: Charles Fries, Dick Berg. Producers: Andrew Donally, Milton Subotsky. Directed by Michael Anderson. Teleplay by Richard Matheson, based on the novel by Ray Bradbury. Director of Photography: Ted Moore, B.S.C. Art Direction: Ashton Gorton. Costumes: Cynthia Tingey. Special Effects and Second Unit Direction: John Stears. Music: Stanley Myers. Electronic Music: Richard Harvey. Make-up: George Frost. Executive in Charge of Production: Malcolm Stuart. Associate

Producer: Charles M. Fries.

Col. John Wilder	Rock Hudson
Ruth Wilder	Gayle Hunnicutt
Spender	Bernie Casey
Black	Nicholas Hammond
Ylla	Maggie Wright
Wise Martian	Terence Longdon
Father Stone	Roddy McDowell
Parkhill	Darren McGavin
Anna Lustig	Maria Schell
Father Peregrine	Fritz Weaver
Mr. K	James Faulkner
Sandship Martian	Derek Lamden



Why wait? We can land on

MARS

By LEONARD DAVID

Impossible." "Science fiction." "Not until after the year 2000 at least."

If the title of this article evokes these or similar responses, you are not alone. The idea of human expeditions to Mars has been relegated to the far future—or worse, to the mythos of science fiction, where it has resided for so long. Yet, somehow, the red planet has always tantalized our spirit of exploration. Many of us grew up expecting to vacation on the fourth planet—or at least to watch television broadcasts of the first Earth emissaries touching down on its rusty soil.

Now, in an era of skimpy space budgets, a fallen Skylab and persistent delays in the first launching of the space shuttle, talk of human

IN
'88

expeditions to Mars seems almost blasphemous. But only ten years ago, this country was making a commitment to landing people on the red planet by the early 1980s!

What happened to our man-on-Mars program? It is a complex story of public disin-

terest, even hostility; of economic priorities, human versus robot, lack of nerve, failure of imagination and an aging space administration afraid of its political shadow.

Today, officially at least, human flight to Mars is but a forgotten dream of futures past. The dream is dead. Long live the dream?

You won't read about it in any NASA news releases, but there are those who say we could be on Mars by 1988. And there are those of us who would like to believe them. But before you start packing your bags, a few passages from space history are in order.

Paper History

The scene is the liftoff of Apollo 11, our first manned Moon landing attempt in 1969. An excited Vice President Spiro Agnew speaks proudly over the launch center's

public address system, praising all who participated in the lunar landing effort. Concluding his accolades, a positive Agnew adds that he believes the U.S. "should articulate a simple, ambitious goal of a manned flight to Mars by the end of this century."

Agnew's enthusiasm is greeted openly and supported by then NASA Administrator Thomas Paine, who later orders key NASA thinkers to incorporate a manned Mars effort into future space plans for the 1980s.

But that wasn't the first time anyone thought of a Mars expedition. During the early 1960s, paper studies had been carried out in various NASA field centers. As many as 60 study contracts were awarded to aerospace companies between 1961 and 1966, all to investigate methods and technologies for interplanetary travel to Mars. As early as June of 1962, specific hardware systems were examined for a manned Mars-Venus fly-by during a 1970-1972 time frame. This project came under the stately name of EMPIRE, an acronym for Early Manned Planetary-Interplanetary Roundtrip Expeditions.

By the mid-'60s, space engineers were convinced that they could get people to Mars, using technology evolved from the Apollo program, with no scientific breakthroughs or technological miracles required.

Spurred by such analyses, and the apparent go-ahead from the Nixon administration, NASA announced its intentions for the man-on-Mars project shortly after the successful Apollo 11 flight to the Moon in 1969.

Hand-picked by the NASA hierarchy to spearhead the effort, and primarily to sell the proposal to Congress, was none other than the late rocket pioneer Wernher von Braun. Von Braun and Mars were almost synonymous. In 1952, the visionary engineer had outlined one of the first technical proposals for human flight to the red planet, simply titled *The Mars Project*.

At that time, von Braun theorized the Martian expedition as a "flotilla of ten space vessels manned by not less than 70 men." The spacecraft would be powered with chemical propellants (just like present-day rockets),

assembled near Earth with materials shuttled into orbit by some 950 flights of a "space ferry." The entire construction activity would take place during an eight-month period. It turns out, more than a quarter of a century later, that the wisdom of von Braun has withstood the test of time and new technologies.

1982: Mars or Bust?

Ten years ago, when he presented the NASA Mars program, von Braun spoke of 1982 as the target date. The plan was to make use of several Saturn V boosters to orbit the hardware and the fuel needed to power nuclear propulsion engines, called NERVs (nuclear engine for rocket vehicle applications). From the material lofted to near-Earth space, two command ships, each holding a crew of six, would be constructed. The two-vehicle technique, it was felt, would add a measure of safety; if one craft broke down, the other could return all 12 astronauts to Earth. The entire mission would take 600 days, with nearly a month spent on the planet's surface. The actual landing would be made with an Apollo-shaped Mars Excursion Module (MEM). Von Braun confidently stated that the Mars undertaking would represent "...no greater challenge than the commitment made in 1961 to land a man on the Moon."

NASA believed the project bold, but justified. Riding on the roar of rocket liftoffs and applause for the first Moon landings, a second generation space program made perfect sense. After all, wasn't the Moon just a stepping stone, a way station to all the planets that lie beyond?

Public reaction was swift—and decidedly negative. The reasons were many and varied: The nation was suffering from the financial drain of the Vietnam war (rising to \$2 billion per month), economic priorities were changing, a general mistrust of high technology began to surface. And it suddenly seemed that in the once-heated "space race," the U.S. was the lone entry. Somehow, the public didn't have much interest in seeing a more expensive replay of Apollo, with the most visi-

ble result being a game of astronaut golf played a hundred million miles from Earth.

Space policy expert Professor John Logsdon of George Washington University sees the crumbling of the Mars objective as "what happens when an agency's plans are significantly at variance with what political leaders judge to be both in the long-term interests of the nation and politically feasible." NASA's manned Mars scheme slowly slipped into the land of never-never.

Machine versus Mortal

Human travel to the sun's fourth planet has so far been usurped by our mechanical brethren—those headline-grabbing robot personalities. Our Mariners and Vikings, and Soviet Mars probes, have flown by, orbited and landed on the planet. Such "cost-effective" ventures have replaced the need for manned interplanetary flight. But for how long?

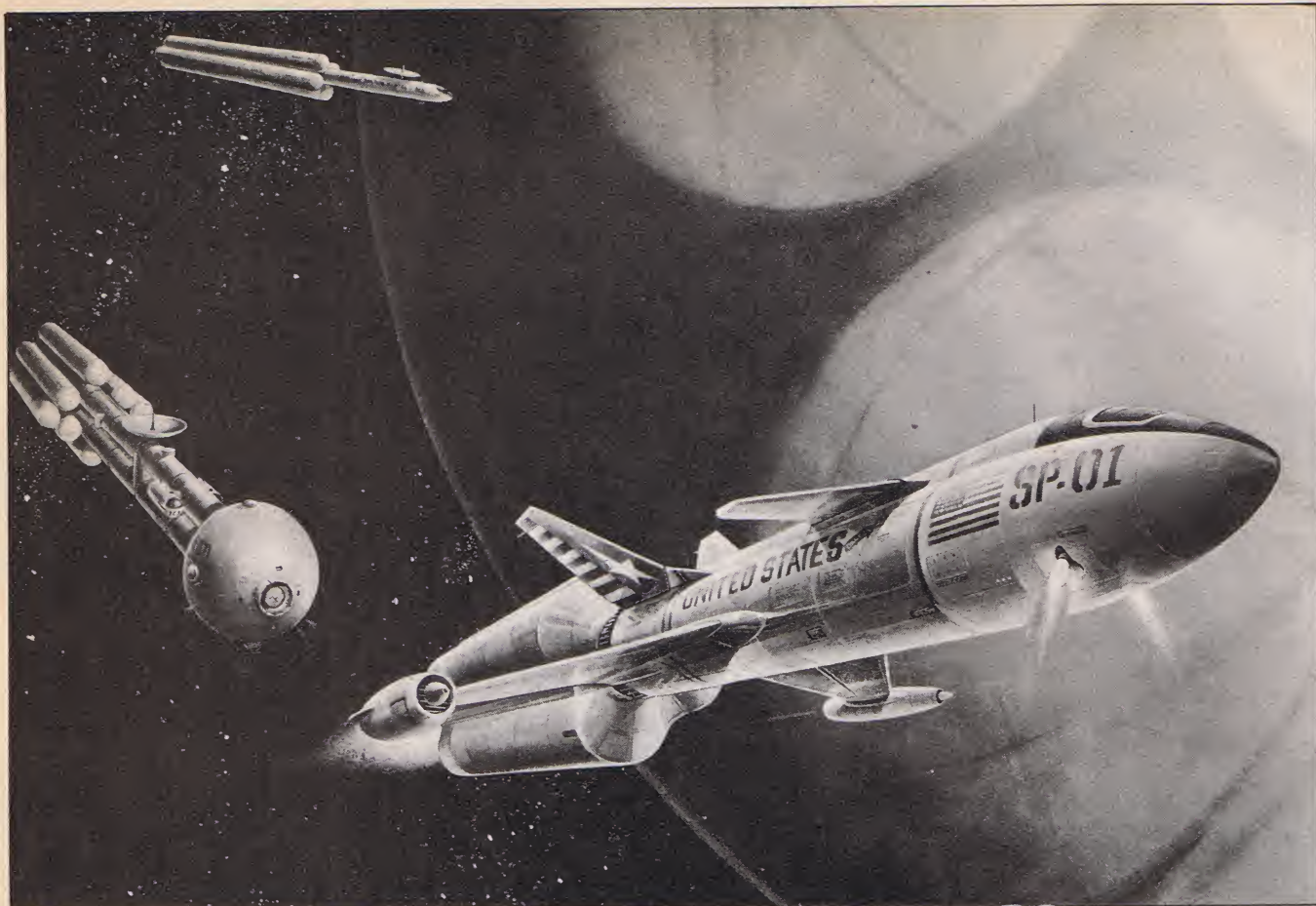
If we follow the example of lunar exploration—first using scouting orbiters, then robot landers, followed by astronauts—Mars is overdue for human visitation. Yet a sampling of NASA officials across the country reveals no cry of "send in the astronauts."

Many scientists favor an unmanned return sample concept; as many as three robot landing vehicles gather several pounds of Martian rock and soil, then launch the material back to Earth in sealed containers for analysis. The "bug" in such a project is the added complexity of protecting Earth from possible "back contamination" (check out the movie *Alien* for a frightening illustration of that danger). Although the majority of experts don't believe virulent Martian germs will be found, expensive space-borne or Earth decontamination facilities may well be required for safety's sake. We all remember the extravagant Apollo quarantine procedures—an expensive exercise which was, in large part, a simple publicity gimmick. But on Mars the possibility of alien organisms, perhaps hostile to life on our planet, is still an open question.

Enthusiasm for the sample mission is typi-



PHOTOS NASA



ART: PAUL ROSSI FOR MARTIN MARIETTA (COURTESY LEONARD DAVID)

In 1960, human expeditions to Mars were on the drawing boards: A nuclear rocket prepares to enter the atmosphere of the red planet.

fied by NASA's technical manager of the unmanned Mars program, Jeff Warner. "It has to be our main goal," Warner asserts. "I'm absolutely convinced samples from Mars will be on Earth by the year 2000."

Such a mission would be costly, perhaps totaling \$5 billion, according to Dr. Arden Albee, program leader for the unmanned Mars program at Jet Propulsion Laboratory (JPL). When queried about sending humans instead of machines, Albee states flatly, "It's not clear man can add anything. Sending man is much too expensive."

Such sentiments are not surprising, particularly from JPL, the unofficial home of robotics. At the California center, engineers have whipped up a shopping list of unmanned Mars candidates, including robot U-2-like airplanes that sweep across the Martian terrain, advanced orbiters, as well as mobile rovers and return-sample spacecraft. Obviously, the scientists favor as many concepts or combinations thereof as possible, although a dollar-conscious Congress will force final decisions.

What is surprising is that there is some dissension among the robot-conscious JPL community. "We've come to a point where manned flight to Mars may be more reasonable," observes James French, JPL's Deputy Manager of the Mars sample return project. Cautioning that such views are his own, and not the official policy of the laboratory, French explains, "We're straining harder and harder to do things with robots. I have ques-

tions about whether the use of robots is totally effective."

The Lesson from Viking

Yet, even as you read this, Viking landers still transmit volumes of data even after years of service on Mars. Do they stand as productive monuments celebrating machine over man? The view that man is the limiting factor, not spacecraft, is reinforced by Dr. Richard Young, Chief of NASA's Planetary Biology and Biosciences division in Washington, D.C. Dr. Young, who believes 2010 is about the right year for humans on Mars, concludes: "A Viking mission with man would have produced about ten percent of the scientific return of the unmanned Viking. The fact that there was no man onboard made it possible. It was a scientific venture. With a man on Viking, it would have been counter-productive."

Dr. Benton Clark of Martin Marietta, an aerospace firm based in Colorado, thinks differently. Viking, Clark contends, strengthened the case for humans on Mars. A Senior Staff Scientist in the company's Planetary Sciences Laboratory, Dr. Clark tips his hat in respect to the Viking results, characterizing them as "stunning." He adds, on the other hand, the missions proved much remains to be learned about Mars, with the robots teaching us a major lesson.

"Spacecraft automation will only achieve what is in fact *readily* achievable. The issue becomes the practicality of machine versus

the practicality of man. Some complex things are simple to automate; some very simple things are extremely complex to automate," Clark stresses.

Viking has not solved some of the most intriguing mysteries of Mars, Clark reminds us. What is the true cause of the gargantuan channels found on the planet? Are they dried river beds from a time in Martian history when tremendous quantities of water flowed there? And with the Vikings digging down into Martian soil a mere ten inches, did they miss deeper permafrost—an important clue

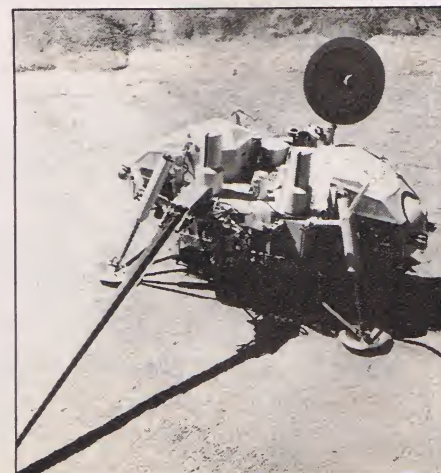


PHOTO: NASA

A full-size working model of the Viking lander, on display at Jet Propulsion Lab. So far, only our robots have visited Mars.

in detecting life on Mars?

It is the search for life on Mars that most clearly demonstrates the vulnerability of machine intelligence compared to human scrutiny. After years of interpreting the data, what is Viking's response to the question: Is there life on Mars? Twenty-six life-seeking experiments later, the robots have radioed back a very clear answer—"Can you repeat the question?"

Have we reached a crossroad in future Mars exploration? Do we now need human investigators to maximize the scientific return? Even the return of a few pounds of Martian turf to Earth could never fully resolve the life on Mars question. Perhaps there are oases of life, hidden in niches, inaccessible to robot inspection...

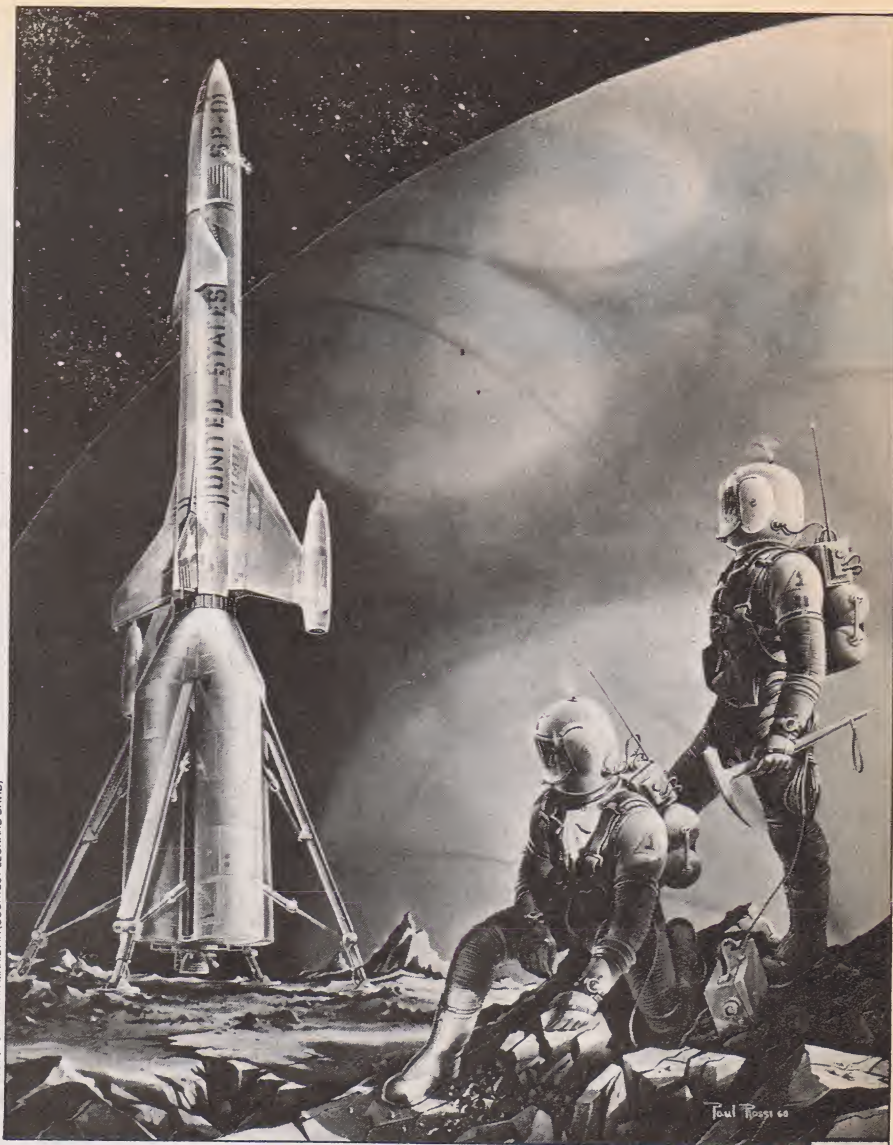
Added to the price tag of the mechanical return sample program is one more concern: The project is a bore! Will the average citizen be captivated by such a costly and intricate scheme? Enough to foot the bill?

The Humanation of Mars

A human trek to the red planet is no simple task—at least not yet. Any Mars project for the near future must take advantage of both human and mechanical capabilities. The formula for the venture is based on a mixture of mortal and machine: human + automation = humanation.

Previous Mars plans called for three-year round-trips, taxing our abilities to wrap astronaut crews in a cocoon of life-supporting technologies. Uncertainties undeniably exist, especially the effects of long periods of weightlessness on the crew, and the psychological impact of the tedious journey.

Crucial elements that will make such an enterprise work, however, are even now scattered in projects and studies that are part of the shuttle era. Needless to say, no one looks upon these projects with an "official" eye to manned interplanetary trips! NASA advance planners are quick to proclaim formal man-on-Mars plans don't exist, for fear of congressional and Office of Management and Budget (OMB) hand-slapping. The latest funded study on human flight to Mars, a small grant, went to Dr. S. Fred Singer, noted space pioneer now at the University of Virginia. Dr. Singer's work proposed an imaginative use of the Martian satellites, Phobos and Deimos, as orbiting observation stations for a party to examine Mars without



In this 1960 conception, two spacemen stop off on Mars' tiny moon, Phobos, before a landing on the red planet. A recent study, the Ph.D. Project, follows this script.

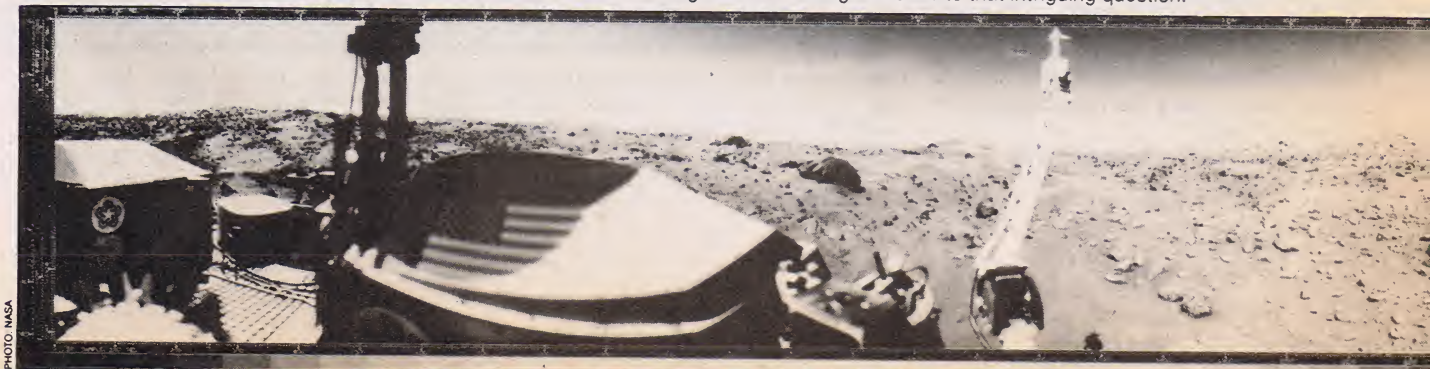
ever landing. The scientist dubs the Phobos-Deimos play his Ph.D. Proposal.

Apparently NASA conducted an "in-house" evaluation of manned Mars flights just a few years ago. The informal appraisal, based on shuttle capabilities, according to agency insiders, was favorable. "We have the technology," reports one space planner, "if money is available and a commitment is made."

Although it's risky to outline an exact technical plan for a Mars flight, the requisite hardware is or will soon be available. The missing ingredients are determination and, of course, money. The price for such a voyage is most often estimated at \$100 billion. But that figure could be drastically reduced by the use of several cost-cutting measures.

A key aspect to launching an affordable
(continued on page 36)

Viking on Mars: After 26 tests designed to detect life, scientists still disagree about Viking's answer to that intriguing question.



DOLPHIN

A new documentary used an underwater serenade to recruit its cetacean stars.

By MALCOLM BRENNER

A diver drifts through the gin-clear waters of the Bahamas. His arms cradle a strange and unwieldy device: a plexiglass container connected to his air exhaust, topped by a keyboard—a pneumatic underwater piano! As he strokes the keys, bubbles and high-pitched, crooning notes emerge. Then, out of the blue, four undulating gray shapes appear, streamlined bodies topped by pointed dorsal fins, mouths filled with sharp teeth—no, not sharks! *Dolphins!* They sweep past the diver, studying him with their clicking echolocation, seemingly entranced by his strange music. Others follow, wave on wave, until the diver and his companions are surrounded by 50 or 60 spotted dolphins who play with them, tease them, and exchange melodies...

This is one scene from a new feature-length documentary film about our sea-going siblings. Titled simply *Dolphin*, it was produced by Bay Area filmmakers Hardy Jones and Michael Wiese. Scheduled for a national release sometime in the fall, it is easily the best movie on the subject to date.

Despite rising interest in their intelligence and plight, dolphins haven't fared so well at the hands of Hollywood. When not carrying bombs or getting their owners murdered (George C. Scott and Trish VandeVere in Mike Nichols' 1975 flipper-flick *Day of the Dolphin*), they were mouthing infantile lines in badly dubbed English. The same year also saw *Jaws of Death*, a sorry pseudo-documentary about killer whales that featured some of the most obviously faked footage ever put on a screen. Two years later, Dino De Laurentiis unleashed *Orca the Killer Whale*, a rubber beastie with a heart of gold: He only ate wicked people...

Foregoing such nonsense, Jones, a ten-

year veteran of television and news, decided to stick to facts and let the dolphins tell their own story. And it's quite accurate to say his film couldn't have been made without the dolphins' voluntary cooperation—something no other filmmaker can claim. (Mitzi, lead dolphin for *Flipper*, once knocked Luke Halpin senseless from his surfboard. Too many retakes...)

A graduate of the human-potential movement, Jones became interested in cetaceans through workshop contacts with John C. Lilly and Buckminster Fuller, both known for their high regard for dolphins. After his research turned up absolutely no good documentary films about dolphins, Jones got together with Wiese. They secured independent financing, gathered a crack crew and set out to make one.

They faced formidable problems. Not content to film captives, Jones wanted to dive with wild dolphins; but they're reportedly shy of divers. An attempt led by Hawaiian naturalist Jim Hudnall to film "spinners" off the coast of Maui proved almost fruitless.

That's when Steve Gagne, former roadie for such rockgroups as Led Zeppelin and the Grateful Dead, swam on the scene with his ingenious aquasonic piano. It was hoped that the dolphins, attracted by the otherworldly music, would be less fearful, more curious, and permit themselves to be filmed.

On its first trial at Sea Life Park, the instrument proved a smash hit with two resident dolphins and a false killer whale, who showed a lively interest in the piano and its player. But was this merely their reaction to *any* change from the humdrum routine of captivity? Only a concert for wild dolphins would tell.


While recording a demonstration of dolphin logic in a Florida oceanarium, Jones and his team were lucky enough to hear of a location in the Bahamas that featured shallow, clear water, a white-sand bottom,

and plentiful dolphins. Here the underwater piano proved itself: The dolphins who came to ride their schooner's bow wave returned when Gagne began to play, and stayed for three days, frolicking with the divers, who were able to film to their hearts' content.

In addition to such lighthearted moments, *Dolphin* also features the darker side of life on the high seas: NOAA footage of dolphins drowning in tuna nets, and the sea off the island of Iki, Japan turned red by the blood of a thousand dolphins slaughtered by local fishermen.

Alternately frolicksome and sobering, the film occasionally dips to self-indulgence, but redeems itself as a unique and honest record of a novel—and successful—experiment in interspecies communication. Its structure and style are reminiscent of another classic diving documentary, Peter Gimble's *Blue Water, White Death*.

Jones, currently negotiating with distributors, has already shot a second film about the fishermen of Iki. "I was amazed," he says of his Japanese hosts. "They were among the kindest and most cooperative people I've ever met. Their catch has gone down 90 percent in the past decade, due largely to overfishing and pollution, and they see the dolphins as the last straw. But killing them won't bring back the lost schools of fish."

If *Dolphin* succeeds, as it deserves to, Jones may move on to bigger whales. With filmmaker David Radnitz lensing Arthur C. Clarke's *Dolphin Island* in New Zealand, and John Lilly reportedly working on a film, our resident alien intelligences may soon be getting more exposure than they have since *Flipper* went into re-runs! How long can it be before they're demanding union scale, Actors Equity and mullet breaks? Even when that day comes, one problem will remain: How do you get a creature with no hands to sign a contract? 



Top of Page: A school of dolphins arrives on the scene in search of an underwater concert. Above: Steve Gagne, a former roadie with such rock groups as Led Zeppelin and The Grateful Dead, plays an aquasonic piano. Dolphins in the area were attracted to both the music and the musician.

H.G. Wells' Time Trip To 1979

Nick Meyer's
Time After Time
is a motion picture
morality tale...
pitting H.G. Wells
against
modern day evil.

By BARBARA LEWIS



On its most superficial level, Nick Meyer's new film, *Time After Time*, can be viewed as a science fiction story similar in style to E.L. Doctorow's best-selling novel *Ragtime*; a mixture of fact and fiction that makes for an exciting adventure tale.

However, for Meyer, the film, due for release this month, is a personal statement of a most profound kind. It is a tale of time traveling morals. The place is London, the year is 1893. A young and eager H.G. Wells, writer, inventor, prophetic thinker, is about to unveil his newest creation: the Time Machine. His audience consists of several gentlemen friends, including his brilliant and distinguished chess partner, Dr. Stevenson. In the middle of the presentation, police enter the house. Dr. Stevenson, it seems, is the cold-blooded killer known throughout England as Jack the Ripper. Acting in blind panic, Stevenson flees the 19th century in the time machine. The machine speeds into the 20th century, coming to a halt in San Francisco in 1979. By coincidence, the city is in the midst

of an H.G. Wells historical retrospective.

Meanwhile, back in 1893, Wells' time machine has returned to him, minus his good friend Stevenson. Wells, of course, is aghast at the evil side of his acquaintance and even more upset at the fact that his own machine has transported this menace to a future era. Wells climbs into his invention and sets off in pursuit of the villain. The remainder of the film chronicles Wells' adventures in the world of the future.

So much for the plot. What fascinates Meyer is the sub-plot: The manner in which Wells, the stereotypical Victorian brimming with codes of honor, loyalty and compassion, is forced to deal with the 20th century; a period of time that Wells has written about in Utopian terms but, in his eyes, turns out to be a truly Barbaric age.

"Wells comes from an era which, at least in our clichéd understanding of it, represented a kind of rational civilization in human history," explains Meyer, sitting in the living room of his California home. "The Victorian era was certainly irrational in a number of

topics like sex; but in a larger sense, the Victorians reveled in science and in solving problems. Underlying it, though, was this concern with a code of behavior."

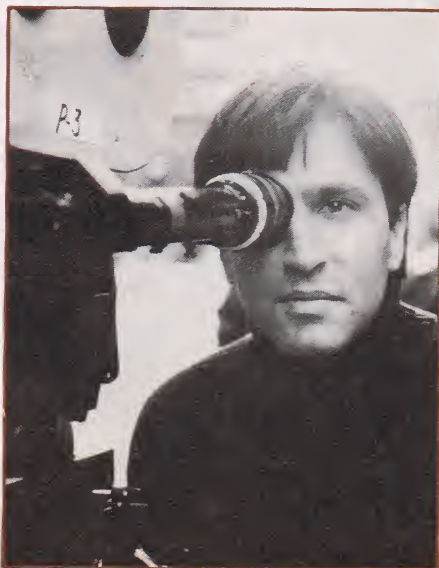
What Meyer has done is to use Wells as a symbol of his own personal disillusionment with the world, and listening to Meyer expand on these disillusionments leaves little doubt as to his disappointment with contemporary standards of behavior.

"It was the aspect of the story that struck me immediately when I read the outline. Karl Alexander, who'd been a former roommate of mine at the University of Iowa, approached me to say he'd read *The Seven Per Cent Solution*, and was writing something loosely based upon it.

"He asked me if I'd read it and critique it, which I said I would. I took his 60 pages and read it and was overwhelmed by it as cinematic material. Not just that though, although it was wonderful entertainment. It just presented itself as a perfect vehicle for expressing a lot of things that had been on my mind for a long time."



Above: Director Nicholas Meyer gives timely instructions to Mary Steenburgen and Malcolm McDowell as they prepare to skip centuries in McDowell's time machine. Below: Meyer envisions a better future on the set.



The film is filled with moments, both large and small, when Meyer/Wells' dismay at human behavior and expression is demonstrated. The satirical theme running throughout is that Wells, the chief proponent of time travel, envisions a perfect society at some point in the future—ideally during the 1970s. Chasing after the Ripper, he discovers that instead of future perfection, he has found future chaos.

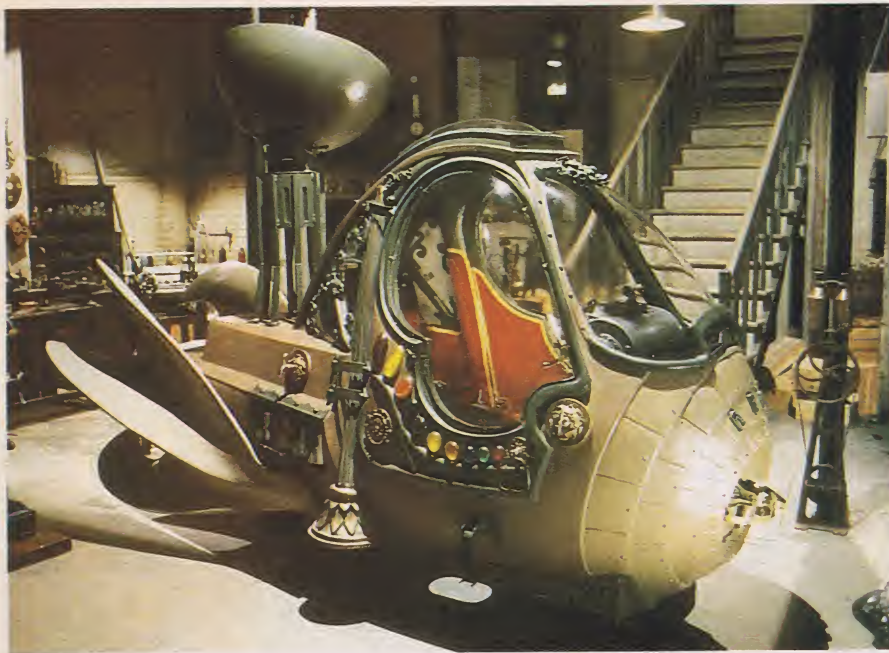
"That's a viewpoint in which I believe," says Meyer with emphasis. "Things are more primitive now than they were one hundred years ago. I think that ignorance is mounting very fast and multiplying even quicker. Goethe has a maxim—it's not mine—that nothing is so frightening as ignorance in action. I get terrified when I see people who can't speak English, who can't read and write and therefore can't understand, but at the same time these people are supposed to vote. The total dominating force in their lives is the big eye in the corner of their homes, their television.

"The thing I love most about the movie is

that I didn't have to do anything to make my point. I just had to put Wells in front of a television set and let him watch. The first time he sees television, he sees an ad that includes a distortion of the human body. Wells can't understand the distortion because anatomy, even in those days, was more accurate than the depiction he was seeing on TV.

"The second time Wells sees TV, someone is flicking the channels, and all that Wells sees on one channel after another is violence and more violence. The man that Wells is pursuing, Jack the Ripper, watches the programs for a while and then says to Wells: 'Ninety years ago, I was a freak. Nowadays I'm an amateur. No one would even notice me today.' "

While all this might sound doom-laden and heavy handed, Meyer has used humor to underline some of his points. In one scene, Wells is asked by someone to "give him a ring"—a phrase that means nothing to Wells who grew up in a telephone-less world. All he can do is look in bewilderment at the ring on his finger and wonder. At another point,



Time After Time's 19th century time machine sits in H. G. Wells' home. Spirited away by Jack the Ripper, it then arrives in 1979. The full scale model has been described as resembling a fairly squat airplane.

Time After Time Cast & Credits

TIME AFTER TIME. A Warner Brothers Film. 1979. 112 minutes. Color. Produced by Herb Jaffe. Directed by Nicholas Meyer. Screenplay by Nicholas Meyer. Based on the book *Time After Time* by Karl Alexander. Music: Miklos Rozsa. Special Effects: Richard Taylor. Production Designer: Edward Carfagno. Cinematography: Paul Lohmann. Film Editor: Donn Cambern.

H. G. Wells Malcolm McDowell
Dr. Stevenson David Warner
Amy Robbins Mary Steenburgen

Wells is walking the streets when he passes a newspaper stand with a headline that reads "COLTS MAUL RAMS." To Wells, football doesn't exist. He understands the words to mean that somewhere, some baby horses have attacked some male sheep.

"I have used humor in places because I don't believe in belaboring a point," comments Meyer. "But some of the incidents aren't funny and aren't meant to be. For instance, it doesn't take Wells long to realize that his imagined Utopian society is actually a materialistic society, and he must get some cash. He decides he has to sell some of his jewelry, and goes into a jewelry shop. The old man behind the counter examines his pieces, and Wells notices some numbers tattooed on the other man's arm. Wells doesn't know what a concentration camp is. The jeweler comments to Wells that he hasn't seen stones and settings like this since before the war.

"Wells is stunned. In his projections about the future, he had been adamant that there would be no more war. 'War?' he says to the jeweler. And the jeweler, who thinks Wells is hard of hearing, says, 'Yes, the Second World War.' And all the camera has to do is rest on Wells' face.

"Later on, Wells is talking to a girl who is telling him how she met her husband during an anti-war demonstration. Wells, trying to appear normal, comments, 'Oh, the Second World War demonstrations?' and the girl replies indignantly, 'Are you kidding? Just how old do you think I am?'

"Wells is thrown. All he can say is 'World War III?' He's beset by irony which doesn't have to be manipulated."

Despite the recent glut of science fiction movies abounding in special effects, Meyer has resisted any thoughts of dazzling his audience with technical marvels.

"It really isn't a film where special effects dominate," smiles Meyer. "It's a science fiction film where mini-skirts, telephones and airplanes are the special effects, because they're the hardware of the future viewed by a

man from the past."

There is one area of the film that will use effects, and that is the part dealing with the actual movement of the time machine through space. Meyer, however, is reluctant to discuss the sequence in too much detail.

"I'm not looking to create a 'trip' experience for the audience," explains Meyer. "What I want to do is something different, something that will exploit the imagination of the audience. I want the audience to participate."

What Meyer will say about his time machine is that he wanted something that Wells could have built in his own lab during the 1890s.

"I was fascinated to find out that when I

researched scientific knowledge of that time, solar energy already existed. We think of it as something new, but there it was 100 years ago. So I had the machine powered by solar energy. I talked about my concept of the time machine with our production designer, and told him I wanted something that not only could have been made by Wells, but that looked Victorian. And that's exactly what he gave me—something that looks like a scaled-down version of the Nautilus! Some people think it looks like a squat airplane, some that it's like a guppy! The machine is pretty detailed, a lot more than, say, George Pal's in *The Time Machine*. Our machine is enclosed, it has stabilizing fins that were copied from an

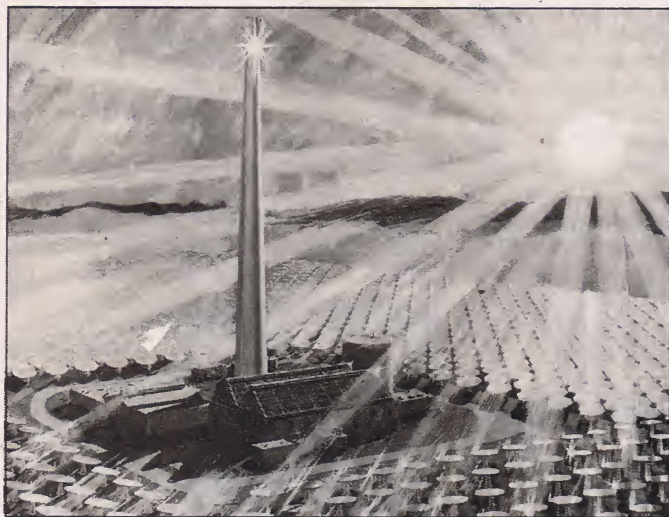
(continued on page 67)



Wells (McDowell) finds Jack the Ripper (Warner) in Wells' Victorian time machine.

ALL PHOTOS © 1979 WARNER BROTHERS

The Solar Alternative—It's Sooner Than We Think



Artist's conception of a solar thermal plant; a series of mirrors reflect solar heat to power a generator. If government and big business begin investing now, Earth could be "solar powered" within 50 years.

There is no doubt but that America is in the thick of a serious energy emergency.

It seems like years ago—1973 actually—that the nation felt the first of many barbs hurled from the Mideast oil fields of the OPEC nations. The warnings of further troubles were clear then but no one seemed concerned enough to take any serious action.

Along comes the summer of '79. Again the gas lines; again OPEC meets and raises its prices; again a marathon summit at Camp David, this time the subject is energy. And while gun-totin' gasaholics queue up to the pumps, the implications still radiate from Three Mile Island, with the jury still out on the question of the future of nukes.

Finally, July 15, President Carter slicks back his hair and comes on the airwaves for a no-nonsense energy homily. The challenge remains our "moral equivalent of war" (or MEOW, as Art Buchwald refers to it), with the President leading us onto the "battlefields of energy," armed with a six-point panacea. The war is on. The Age of the Energy Guzzler is over, and some serious decisions—economic, political, ecological, social—concerning our overall future can wait no longer.

Basically, our energy alternatives are few; either we go nuclear or solar (in conjunction with other renewable sources, i.e. wind, wood, geothermal). It's now a matter of establishing policy and getting to work. When everything is considered, though, it seems clear that solar is the route to go.

The fact is that we really are running out of oil, presently our major source of energy. Not even the oil companies will deny this any longer. We may not actually pump all the wells dry, but the way things are going, oil will eventually out-price itself. Oil is a nonrenewable resource, and as the more accessible

deposits run dry, it naturally becomes more and more difficult and expensive to extract the stuff. Meanwhile, the demands for energy escalate—right along with the prices.

All this, of course, was no surprise to the "energy experts" back in the '50s when they embarked on our government's nuclear power industry. Since then, plans have called for nuclear to supply at least one quarter of the new demand for energy between 1976 and 1985 (with solar to supply less than two percent).

In theory, nuclear energy sounds like an intelligent, efficient means of diminishing our desperation for oil—especially from foreign sources. Unfortunately—indeed, considering the time and money already invested—nuclear won't work. The accident at Three Mile Island, in general, is the damning indictment of the industry—the smoking gun. Not that the events near Harrisburg last spring were of themselves the final straw; rather, the accident brought the controversy squarely up to the forefront. Answers are being demanded by the public. We realize that we don't know enough about the safety of the source of 25 percent of our energy.

So, now, with 72 plants complete, public opinion polls show the majority of Americans opposed to further nuclear development. Disenchantment is at the point where the industry may not survive the scrutiny.

A recent six-year energy study out of Harvard* recommends conservation and the immediate, stepped-up development of solar energy as the solution to the crisis. The same conclusion is coming from other experts, and is being eyed more enthusiastically by the business community.

Ecologist Barry Commoner, in a recent two-part article in the *New Yorker*, convincingly outlined the arguments for solar power as our only alternative. He examined the various solar products: solid fuel (wood); liquid fuel (alcohol made from grain, i.e. gasahol); gaseous fuel (methane made from manure, plant residues and sewage); hydroelectric power; photovoltaic energy; wind-generated electricity; and direct heat.

This may sound more like some heady experiment for a commune, but, in fact, the technology is available to begin a widespread, decentralized solar transition now, utilizing any geographic area's solar peculiarities. For example, desert regions could produce photovoltaic power; heavily forested areas could burn wood; agricultural areas could produce methane and alcohol fuel from grains. In total, within 50 years, we could gradually reduce our need for heating oil, gasoline, natural gas and nuclear power. (Commoner cites a study that predicts that twice the energy needs for Minnesota could be produced by harvesting the state's wild cattail crop for methane. A Swedish report verifies the plan's ecological safety.) The prospect of transmitting solar energy from space via satellite, in the form of microwaves or laser beams, is another consideration.

All that's really needed is, of course, money; which translates into needing a firm commitment of government and industry. Even the most brilliant of ideas go nowhere without marketing.

The proof of the solar alternative is there, so the first challenge is to convince government and industry. The general uneasiness with nukes and the bad press is helping. Also, an increased dependence on nuclear would mean an immediate switch to using more coal, with the real danger of irreparable pollution of the environment. Furthermore, the investment capital for nuclear plants—especially if plans for giant breeders go ahead—are astronomical, more so in our inflated economy.

Solar energy is renewable—we'll never run out, and no one owns the sun (yet!). Admittedly, solar equipment is also expensive, but as witnessed in the television and electronic calculator industries, technology, demand and economic attractiveness all go together.

Switching on to solar will tamper with essential mores of America. Some not-so-welcome changes will undoubtedly occur. But it doesn't mean a halt to progress or a regression "back to basics." It is paramount that policies be set forth now; it is no longer necessary to wait. The signs are with us again and this time they must not be ignored. **G**

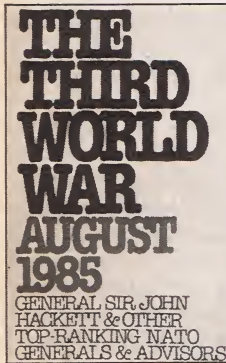
**Energy Future*, Random House

Eve of Destruction

Needs SALT

Just like shopping malls, bars and pinball parlors, the Pentagon has its own electronic game room. But in the Pentagon, the computers kill millions of "people" every year. And when the machines stop and the casualties are counted, the "winner" of the next war is named. The games they play here become our nation's strategic scenarios, our next battle plans. Lately, it seems that the

nuclear option is one scenario that's fallen into disfavor. The generals on both sides have played out innumerable uses of the "ultimate weapon" and found that nuclear's a no-win situation no matter who starts tossing them around.



So while the SALT talks may have put the nukes back in the news, they make only a cameo appearance in **The Third World War** (\$12.95 in hardcover from Macmillan). General Sir John Hackett's chilling scenario for an alternative to nuclear war is a massive conventional conflict fought with the best new technologies. And guess what—the good guys win!

This tale of WW III begins when the Soviets invade West Germany in August, 1985. The world situation begins to heat up in 1984, as the Soviets start squabbles in the Mideast and Africa, put down an insurrection of their own in Yugoslavia and worry about food shortages and further revolts in their other satellite countries. Since war effectively distracts people waiting in bread lines, the Reds decide the time is right to "ensure a lasting peace in Europe" and that's when they head into Germany.

This is a compelling account of a high-tech tussle put together by Hackett and a team of five retired top NATO generals and a British diplomat. They chronicle the action with a mix of exciting first-person combat accounts, TV reports from the front (what's a good firefight without a mini-cam?), deep background reports from both sides of the Iron Curtain and technical summaries of the weapons and strategies of both sides.

World War III is the first war fought with microprocessor technology and that means more effective bangs for the buck. If you can see your target you can destroy it. Microprocessors reduce pilots to passengers as they fly

the jets to their targets below enemy radar, too close to the ground for human reflexes, delivering microprocessor-guided bombs almost smart enough to talk to. They protect high-flying jets by analyzing incoming radar signals and arranging elaborately jammed replies. They allow soldiers to go one-on-one with enemy tanks by flying tiny guided missiles to their heavily armored adversaries. Microprocessors pilot cruise missiles, run radars, aim guns and scream warnings—they are the precursor to the military robot and their role in this conflict is crucial.

Soldiers in WW III are bathed in deadly gases, bombed with exotic conventional weapons only slightly less powerful than small atomic bombs, moved faster and killed quicker than any soldiers before them. Some of their number watch from a vantage point in space—and demonstrate handily that men can die there too.

In fact, this is the most deadly and expensive war in history. And that makes it history's shortest war too. Tanks cost tens of millions of dollars, jet fighters nearly a hundred million each and hundreds of these will be knocked out every day. Who can afford this foolishness? Even if either side were able to spend enough for weapons for a long war, they still couldn't stockpile enough fuel to keep these gas-guzzling behemoths rolling for more than a few weeks.

All this death and destruction does have a happy ending, of sorts. After scaring the West, the Soviets run out of gas, allies and leaders all at the same time, leaving NATO to reorganize the world.

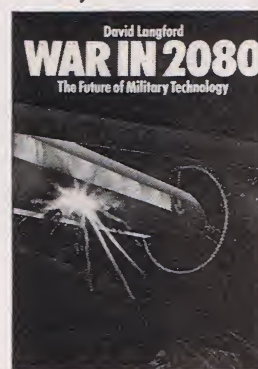
The authors sum the book up by calling it a cautionary tale. What they're cautioning the readers about is the "sorry" state of western military budgets today. That's right, this is a blatant advertisement for bigger and better bucks for the Pentagon and its powerful pals. To win this fictional confrontation, NATO uses more tanks, jets and soldiers than anyone outside of a padded Pentagon cell has ever dreamed of massing.

Not surprisingly, this book struck some spectacular sparks when it was published in the United Kingdom last year. It was the center of a heated marathon debate in Parliament and now that it's been mailed out to the rest of the western leaders, certain men in uniform hope that it will cast its insidiously logical spell over legislators everywhere.

Here's hoping that this scholarly explication of current weaponry and tactics is satisfied with being a bloodthirsty bestseller and doesn't feed the military's appetite for bigger bucks, bangs and bombers.

Future Fights

If war in 1985 sounds like a hellish proposition, wait until **War in 2080** (\$12.95 in hardcover from Morrow) with its planet-busting bombs, antimatter missiles and exotic gases and rays fanning out across the landscape. Author David Langford—a British physicist, science writer and science fiction fan—is optimistic enough to believe that we'll survive the military's best efforts to the contrary into the



21st century, but is sufficiently realistic enough to recognize that there aren't any noticeable trends toward beating our atomic swords into plowshares.

War in 2080 is a catalog of the best guesses of science and science fiction about the future

of war and weaponry. Langford spells out the evolution of armaments, from the first sling and spear to present-day nuclear gadgets and beyond to a time of interstellar combats. There is no single scenario for a war in 2080; instead this book examines the myriad alternatives that develop from today's possibilities and improbabilities.

Langford does a brilliant job here. He makes military hardware, the book's main concern, understandable; then goes one step further to make the software—strategy—comprehensible as well. He also manages to deflect the reader's initial repulsion to the inherent nastiness of war with a not very subtle mocking of the military mindset that's forever asking for a bigger bang. His sardonic tone enables the reader to relish this collection of doomsday predictions.

Langford's opening volley is an examination of the weapons of the present and near future; those confined to Earth and nearby space. Looking first at the nuclear option, he explains clearly and simply how nukes work, their effects, military plans to use them and how, despite all their strategic scenarios, nobody knows exactly how a nuclear war will proceed. Moving on to some of the more science fictional attacks, he finds that many make better reading than sense. For example, the ubiquitous blaster is now a possibility in the form of a hand laser. But a hand laser, at least for the foreseeable future, will be a little bigger than a bag of golf clubs and would envelop its user in a cloud of poisonous gas, just before frying him. A more sensible attack

would be a bombardment of Earth from the Moon using an O'Neill mass driver. Tossing packages of Moon dirt down Earth's gravity well, an attack could be launched much like the one described in Robert Heinlein's *The Moon is a Harsh Mistress*.

Moving further out into space, the possibilities become endless, if not much more, pointless. War with another system is almost impossible. Because of the travel time, centuries would pass between the declaration of war and the first shot. It would take a monumentally stubborn people to keep an interstellar war going for generations.

The only solution to this would be faster-than-light drive and Langford comes through here with flying colors. He covers the best hopes of science—going through black holes into a universe where the faster-than-light drive is possible, tachyon conversion, and quantum tunneling—but he has his real fun recounting some of the bizarre rationalizations that have kept SF's heroes zooming across the galaxy.

Two among them are Harry Harrison's Bloater Drive, a process that lets a ship stretch its nose across space to its destination and then pull its tail on along, and "Doc" Smith's massless drive that would have his hero's ship bouncing off every speck of interstellar dust it has the misfortune to bump into.

This book closes on a pleasant note: a shopping list of ways to destroy the world. You can blast the sun with a gamma ray laser and it will quickly go nova, you can blow away the crust of the planet with only 200 one-megaton bombs, or, with larger megatonnage, you can stop Earth's spin... or just shove a black hole our way and the whole problem disappears.

This is a wonderful book that will end dozens of arguments, give perverse pleasure on truly dreary days and teach you more about the truly nasty possibilities of physics than any number of high school teachers. If you plan to rule the world, this is the first book you should buy.

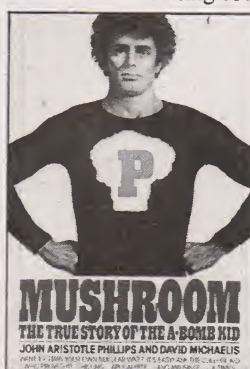
Do-It-Yourself Nuke

Here's evidence that you don't have to be a country to be a nuclear power. **Mushroom** (\$1.95 in paperback from Pocket Books) by John Aristotle Phillips and David Michaelis is the story of Phillips' junior physics project, "How to Build Your Own Atomic Bomb," his successful design and ensuing fame.

Phillips is the sort of all-American student that movies are made about. His grades are embarrassingly average, he plays the cowbell in the marching band until he's thrown out, is the Princeton Tiger mascot because no one else shows up for the tryout and makes his pocket money off a pizza delivery service. He

becomes a famous average student when he takes Freeman Dyson's lectures about the dangers of nuclear terrorism to heart and decides to see if the terrorists really could design an atomic bomb that would work.

Dyson becomes his advisor on this project—something that both helps and hinders. Dyson is a wonderful teacher and introduces Phillips to the intricacies of atomic fission, but beyond that, any time the student gets close to a crucial bit of information, Dyson's security oath forces him to clam up. This makes for frustrating counseling sessions.



Phillips' first big break comes when he spends his spring vacation at the National Information Service in Washington, D.C. Here he finds a series of technical histories of the team that built the first atomic bombs. These were declassified under the Atoms for Peace Program in the early '60s, and describe in detail the problems encountered by the scientists building the first atomic bombs. The entire batch of documents costs him less than \$25 and draws only a matter-of-fact "Oh, you want to build a bomb too?" from the clerk. For the first time Phillips thinks he has a chance. Evidently Dyson agrees because when Phillips flashes his finds at their next session, the professor is shaken.

This book isn't a scientific memoir. You aren't told how to design an atomic bomb, you're just told how easy the information is to come by. You are also told what it takes to be a good roommate (humor and manners), how to deliver pizza, and how fun it is to be a mascot. But Phillips' fun ends when he turns in his paper and his professors explain that he got an A, but his paper is being classified instead of returned.

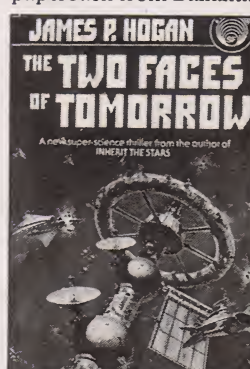
This success leads him into instant stardom—a victim of what he calls the Whoopie Effect. Newspapers and broadcasters interview him, foreign governments phone and a bumbling Pakistani spy approaches him.

This is a slick story that entertains and enlightens. Though Phillips does give us a little more personal trivia than necessary, his research brings to light two important and frightening facts—that even an average student with only a basic understanding of nuclear physics can cobble together a workable design for an atomic bomb—and that every bomb designed and built since 1945 has worked on the first try.

Colony + Computer = Catastrophe

Science fiction has its fads. Successful books, scientific breakthroughs or new ideas spawn dozens of other explanations, extrapolations or literary arguments about what may happen tomorrow. *Dune* brought us a spate of eco-disasters on planets near and far, the women's movement brought a lot of books with women doing many of the things men have already done, and the latest rage is space colonies, thanks to Dr. O'Neill et al.

In **The Two Faces of Tomorrow** (\$1.95 in paperback from Ballantine/Del Rey), James



P. Hogan scores a terrific coup in this latest craze by being the first to utterly destroy a space colony.

In Hogan's world of tomorrow, civilization has grown so complex that what they need is a giant computer mother for everyone,

something that can control everything—you know, get the trains to run on time and all that. The only problem is that their present computer is making all its decisions so logically that it's come too close too many times to killing the people it's trying to help.

The solution is a universal, self-aware and self-programming computer. And in order to teach their super computer manners and common sense enough to keep it from wiping out humanity, they decide to give it a small world to practice on—a space colony.

They program their ultimate computer to survive at any and all costs, reasoning that since this was the key to the evolution of the human race, the evolution of a machine cannot be all that different. They then proceed to attack the computer, confident that once the computer learns what it needs to live, it will work just as hard for humans—that is, as soon as they tell it exactly what humans are.

They are quite confident that if anything goes wrong with this marvelously ingenious plan, they can always pull the proverbial plug. The fun begins when they come to the startling revelation that the first thing this machine learned to do was how to protect its plug.

Hogan presents the reader with a wonderfully complicated fight between man and machine and an almost magical conclusion. And, although his basic plot premise—super scientist versus his own creation—is the same as in his last book, this is still an easy novel to love if you relish epic science adventure played out on realistic and well-designed sets.

Books in Brief

Broca's Brain: Reflections on the Romance of Science by Carl Sagan (\$10.95 in hardcover from Random House). Carl Sagan loves science. America loves Carl Sagan. Ergo, the populace at large should enjoy reading *Broca's Brain*. Pulitzer Prize winning astronomer-author Sagan has, in recent years, become the best known spokesman for science aimed at the layman. In *Brain*, he attempts to introduce over two dozen topics to his followers, delving into both science fact and science speculation. Paul Broca, the 19th century French surgeon who experimented on the human brain, is given his due, as are Robert Goddard, the father of modern space exploration, and Albert Einstein, probably the best known man of science of this century. Also on hand for the ride are UFOs, ESP, present day religion, astronomy, science fiction, robots and the search for extraterrestrial intelligence. While most of Sagan's essays are quite readable, there are a few that will pose problems to readers unfamiliar with the subject matter. All in all, however, *Broca's Brain* shapes up as a welcome companion piece to Sagan's earlier works: *The Dragons of Eden* and *The Cosmic Connection*. (Ed Naha)

Mysterious Visions, edited by Charles Waugh, Martin Greenberg and Joseph Olander (\$15 in hardcover from St. Martins). This is a truly marvelous book; a collection of some of the strangest, sickest and most stupefying science fiction tales ever penned. What makes these SF stories so different from those collected in most SF anthologies lies in the fact that they were not penned by acknowledged masters of the genre. They were, in fact, written by well-known mystery authors and are, logically enough, who and what dunnits of the first caliber. Included in this tome are enigmatic tales by Agatha Christie, John D. MacDonald, Mickey Spillane, Erle Stanley Gardner and Arthur Conan Doyle. At their command, loving aliens, satanic emissaries, interstellar hot rods and even the Loch Ness Monster tangle with the law. Although some of the tales included may be a bit far-fetched scientifically, they are lovingly crafted and beautifully baffling brain teasers. (Ed Naha)

The Karma Affair by Arsen Darnay (\$2.25 in paperback from Ace). Author Darnay obviously takes to heart the latest theories concerning reincarnation. His three main characters, a minor bureaucrat who was a Nazi concentration camp guard in a former life, a brilliant and obsessed scientist who had been his victim, and a woman constantly caught between them, pass through several

lives in an alternating dance of victim and victimizer.

Their activities revolve around the psychotron, an ingenious machine invented by the scientist to ensure continued vigilance over dangerous nuclear wastes throughout the generations. The psychotron "catches" souls after their bodies have died, conditions them to be uncontrollably attracted to atomic radiation, and then releases them to enter a new reincarnation. Once the new person has reached adolescence, the conditioning comes into force and he becomes totally, mindlessly and sexually drawn to the waste disposal facility, a new member of its priesthood. (A fascinating, if grotesque scene is that of a group of reincarnated nuclear executives, clad in half-remembered tatters of their former business attire, sitting in eager and silent devotion around an atomic bomb.) If you accept the basic premise of the novel, reincarnation, the developments thereof become strangely, and horribly, possible.

(Barbara Krasnoff)

The Resurrectionist by Gary K. Wolf (\$7.95 in hardcover from Doubleday). In the not too distant future, global citizens go from location to location via a transportation bridge not unlike the one used in the old *Star Trek* re-runs. When ballerina Galin Rosmanov gets lost in the wires, it's up to Bridge Authority troubleshooter Saul Lukas to find out what went wrong. Unfortunately, since *The Resurrectionist* is not a *Star Trek* re-run, old Saul doesn't have Spock or Kirk or commercial breaks on his side. What evolves is a standard tale of espionage with science fiction trappings and a couple of midstream personality overhauls that will keep one blinking for paragraphs. Somber crimefighters suddenly become wisecrackers. Good guys become bad guys and bad guys become dead guys. A tribble or two along the way would have helped immeasurably.

(Joseph Kay)

Lightstruck by Wallace E. Knight (\$8.95 in hardcover from Atlantic Little Brown). After a mysterious bright light is sighted over the small Midwestern town of Buck's Hill, the populace becomes slightly unhinged. It's not that the town is dumbstruck by the event, since it seems fairly dumb to start out with. But the local citizens, marrow-headed types with names like Quart Zimmer, Jimmy Doe Dewey and Floss Vickerman, all see fit to come up with turgid schemes to make a profit out of the visitation. Their stories, of course, never mesh. Was the light a UFO? Sex starved aliens? God? None of the above? Who knows? Who cares? The citizens spin

their moralistic wheels for 178 pages and the reader is left with the existential question "howuzzatagain?" lingering on the lips. *Lightstruck* is not as much fun as *Invasion of the Saucer Men* but just as profound.

(Charles Bogle)

Enterprise by Jerry Grey (\$10.95 in hardcover from William Morrow & Co.) If you're beginning to wonder whatever happened to the space shuttle, this lively narrative is just the book for a fresh perspective on how the ungainly hybrid spacecraft came to be, why it's late getting off the ground—and what it promises for the future. Space program observer (and insider) Grey delivers a well-written behind-the-scenes view of the personalities and politics involved in the making of the space shuttle. Nicely avoiding the trap of bogging down in technical detail, Grey nevertheless makes the shuttle comprehensible both in terms of what it is and how it got to be that way. Surprise: This rocket-plane is nobody's idea of the perfect next generation spaceship. Rather, it's the culmination of political, budgetary and engineering compromises. All criticisms are offered in good humor, however, and the author's impatience with the slow pace of our current space program is offset by his basic optimism about the promise of space enterprises.

(Robin Snelson)

Catacomb Years by Michael Bishop (\$10.95 in hardcover from Berkley/Putnam). This epic volume appears to be a skillfully interwoven collection of several of Bishop's short stories, all set in his future history when the U.S. has fragmented into Urban Nuclei (cities encapsulated by domes) and loosely aligned rural unions. Bishop concentrates on life under the bubbles—specifically, in the UrNu of Atlanta. In the introduction, Bishop rationalizes the state of affairs in his 21st century set as a result of "the irrational popular notion that the ultimate urban environment must exist beneath a bubble or a Dome," and goes on to explain: "A science fiction given for decades, this notion proved—if only in retrospect—an embarrassment to those who had taken it up secondhand without examining the preconceptions on which it was based."

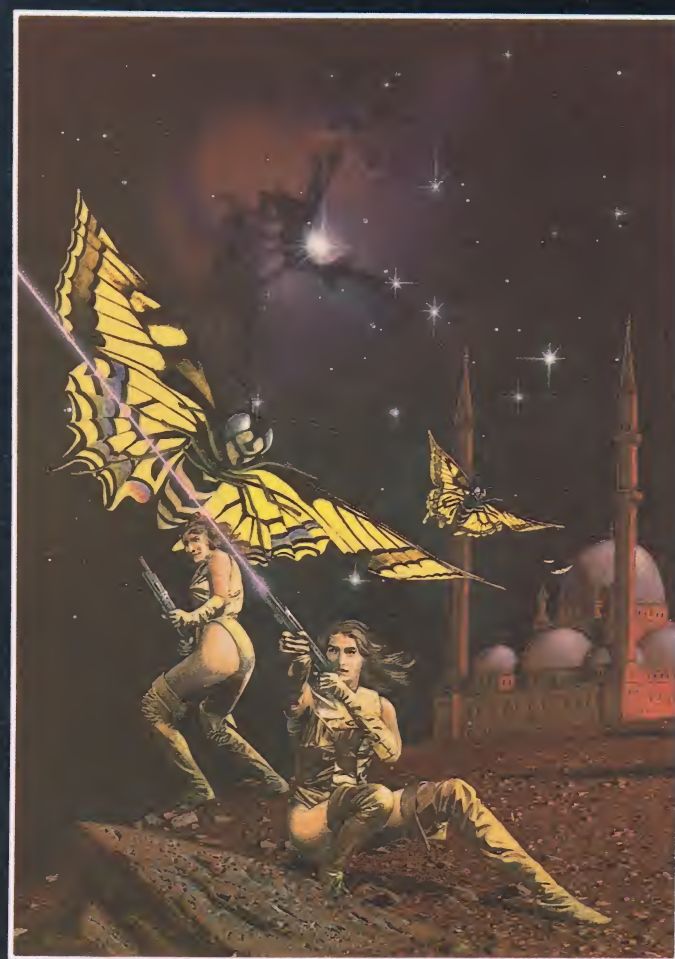
Over the course of the book—essentially self-contained slice-of-life stories about people from all strata of the catacombed city—everything moves toward the society's realization that there is life outside their, isolated domed existence. But the eye-opening doesn't come easy to any of Bishop's richly textured characters residing under this futuristic bubble.

(Robin Snelson)

Ron Miller

One of the hazards of being an astronomical artist is that some smart scientist may one day uncover some new information that relegates a once scrupulously scientific vision into the realm of science fiction. Case in point: Ron Miller's stunning view of Saturn's moon Titan on the following pages. When the painting was done several months ago, Ron says, "It was painted according to the latest projections of what people think Titan looks like." However, by the time you read this, scientists will have an abundance of new information about Saturn and its Earth-like satellite—due to the Pioneer spacecraft fly-by on September 1. But that doesn't discourage Ron Miller. "I've had paintings go out of date within hours of finishing them," he shrugs good-naturedly. "After the fly-by, this painting will either be startlingly factual, or it will be one of those historic paintings about which we say 'Scientists once thought Titan would look like this, but we now know...'"

What data contributed to this particularly dramatic vision of Titan's surface? "You can look through a telescope and see that Titan is red," the artist explains. "It is thought that the methane, hydrogen and ammonia atmosphere of Titan is at least as dense as Earth's atmosphere. The gases themselves are colorless, but the ultraviolet light from the sun produces long chain molecules which



give the atmosphere these bright colors—probably for the same reason Jupiter's red spot is red. The orange color of the ground is due to these long chain molecules sifting out of the atmosphere.

"It's a very clear day on Titan, which is unusual, since there is very little active weather on Titan because it's so cold there. In fact, scientists expect to find almost total overcast. But on one of

these very unusual clear days, the sky would appear blue between the clouds."

The methane geyser going off in the painting is based on an idea of Carl Sagan's; that Titan is thermally active, just as Jupiter's famous volcanic moon Io turned out to be.

"The geyser works just like an Earth geyser, except it's spewing methane," Ron explains, adding

that the reflecting pool in the foreground is either liquid ammonia or liquid methane.

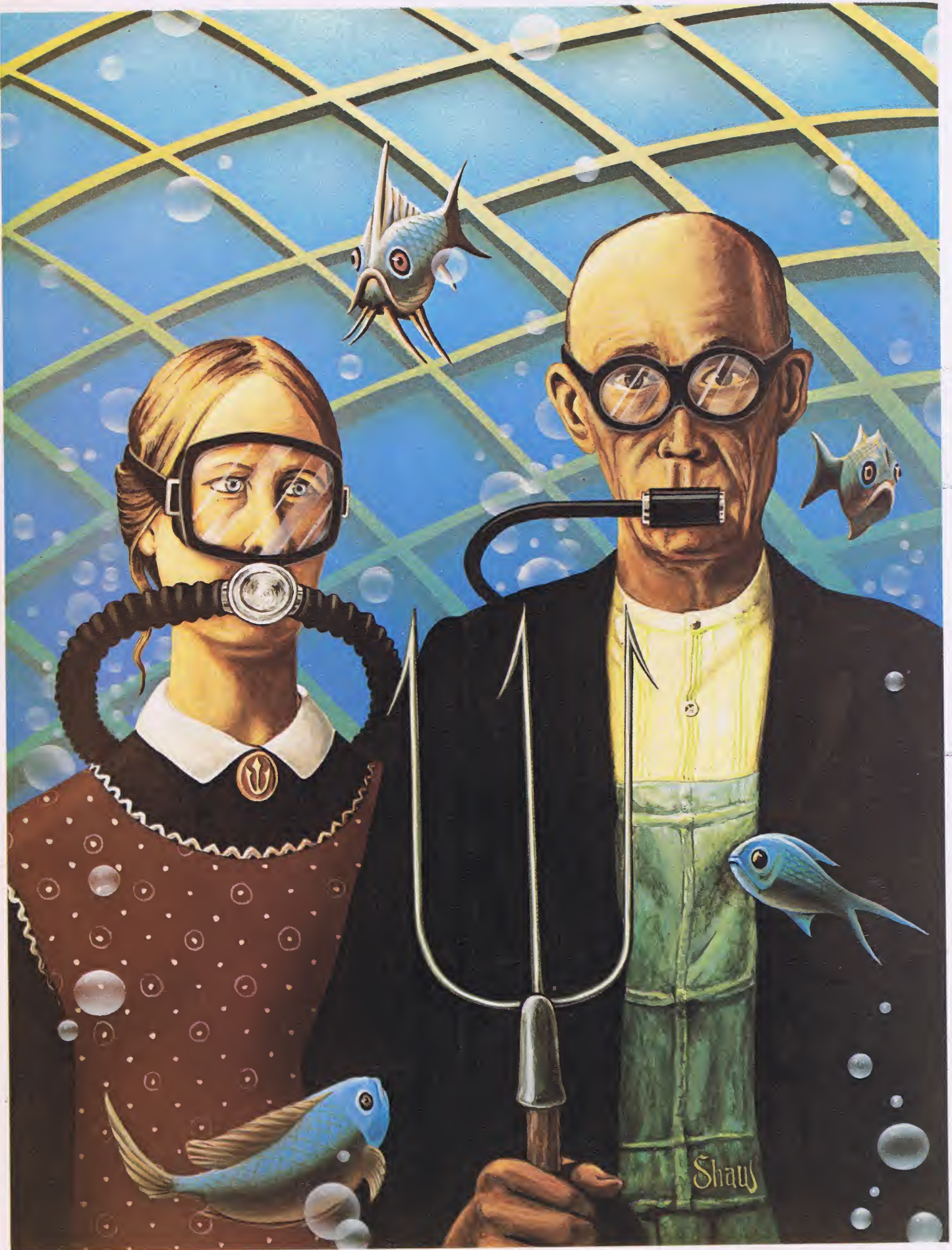
Whether this painting is enshrined as an example of this astronomical artist's remarkable prescience, or finally takes its place among "historical" space art, only the planetary probes will tell.

Not all of Miller's art is so solidly anchored in science fact. He enjoys creating fantasy paintings and is currently working on a series of illustrations for a book called *Dragon Tales* (this sandwiched in between several dozen paintings he's doing for a National Geographic children's atlas of the universe). But as the painting on this page demonstrates, Ron Miller is equally at home in the realm of fantasy and science fiction. In fact, he's literally at home with the model in this painting, called "Captain Judikah of Galactic Patrol." The lady in question is his wife, Judith, modeling one of the science fiction costumes she makes herself. Both Millers enjoy attending science fiction conventions, with Ron's paintings in the art exhibitions and Judith's costumes taking center stage at the masquerade balls.

Tongue planted firmly in cheek, Ron explains, "Captain Judikah is battling the killer butterflies of Aldebaran," then laughs. "This is the kind of painting that's fun to do when you're sick and tired of hard, accurate science." E







ART BARCLAY SHAW

Mariculture

Ever since the first caveman chomped on reeds, rolled the sticky-wet fiber between his hands, wove these strands into nets and strung them across rivers and bays, fishing has remained a tricky and precarious business. Fish can mysteriously disappear from their traditional beds, red tides can wipe out whole harvests of shellfish, and overfishing can dangerously deplete natural resources.

In the future, the harvest from the seas and waterways of the world will play an increasingly important role in feeding this planet's growing population. Yet today that harvest is still conducted on a primitive hunter-gatherer level, not far removed in philosophy from the caveman's reed nets. While the harvest of the land has evolved into the relatively sophisticated business of sowing and reaping, the seas continue to be exploited with little or no thought to replenishing their seemingly boundless wealth.

But all that's slowly changing. Seafood—such as shrimp (which is presently trawled seasonally off the bottom, deheaded by hand and packed in ice, thereby keeping the prices high), trout and oysters—could be raised on land or cultivated in off-shore "farms." On a small scale, fish have already been cultivated successfully in some greenhouses. The day when oysters can be raised in plastic trays in huge farms spread out over several acres of abandoned land or in deserted inner-city commercial buildings may not be too far off.

Already, mussel farming is a 30-year-old industry in Galicia in the northwestern part of Spain. Specially constructed catamaran mussel rafts, usually about 18 by 18 meters, support 600 to 800 ropes. Most of the young mussels, called "seed," are scraped off rocks in the winter (January to March) and attached on shore to these lines. Ropes have proved practical because mussels crowded on rocks do not grow to market size. Suspended, the mussels have a greater opportunity to feed. They are safely out of reach of predator crabs and starfish and, because they are never on

Why Fish When You Can Farm?

By NANCY NAGLIN

the bottom, they fail to develop irritating, gritty pearls caused by parasitic invaders.

The rest of the seed stock, a remaining 30 to 40 percent, originates as mussel larvae, which are enticed to roost on synthetic fibers wrapped around ropes suspended for this purpose. After the first three to six months the mussels, which feed voraciously on tiny floating plants called phytoplankton, need to be thinned. It only takes about eight to nine months for these mussels to reach a market size of about eight to ten cm. On shore the mussels are hand-picked from the ropes and cleansed in baths of purified water mixed with one to three parts per million of sodium hypochlorite.

But how important are mussels as a food source? Eaten raw, baked in the half shell, over rice or marinara, one pound of mussel meat contains 65.3 grams of protein as compared to 59.1 grams for beef. They contain one-quarter of the calories, one-sixteenth the fat and three times the carbohydrates of beef with considerable quantities of vitamins and minerals thrown in for good measure.

In fact, during World War II, mussel meat became an important food in the U.S. After the war, production plummeted when traditional American goodies once again became available. Unfortunately, mussels still suggest an exotic, gourmet treat. But heartened by the success in Spain, mussels have been cultivated experimentally since 1973 by the University of Maine and the University of

New Hampshire in hatcheries on the Damariscotta and Sheepscott Rivers in Maine. The fact that the Galician rafts produce 30,000 to 90,000 kg of mussels per raft has also sparked production in Holland and France.

Considering that seafood is the chief source of animal protein for over half the world's population, it makes economic sense to look to mariculture—the planned cultivation of marine life—to supply the food of the future. Fast food restaurants now offer a choice of beef or fish filet sandwiches; someday, there may not be a choice. In fact, in most parts of the world, that someday has already arrived.

Not surprisingly, Asian countries, which have been forced to rely more heavily on marine protein than the West, have aggressively expanded mariculture techniques. For instance, in Vizhingham, a fishing village in southeast India, the town's equally divided Moslem and Christian population are co-partners in the Lobster and Oyster Culture Farm. With a minimum of technological expertise, the villagers are able to depend on a reliable food source.

The Farm maintains six rafts made from the nearby, quickly-growing casuarina tree. Ropes made from coconut fiber are suspended into the water and support about 8,000 oysters. The town is guaranteed a solid protein source as well as a saleable product. Best of all, cultivating oysters this way is not labor intensive. The entire operation can be regulated by only two people working only two hours a day.

In the Philippines, Indonesia and Taiwan, milkfish form a substantial part of the local diet. Fish farms in Laguna de Bay, near Manila, stretch over 4,000 hectares. The farms are divided into bamboo-and-net enclosures which contain 30,000 baby fish or fingerlings to a hectare. The fish are fed bran for the first week of life, crushed ice cream cones during the second week, bread the third and fourth weeks. Afterwards, like enclosed



farm animals, they feed on plankton in the bay and are ready for market in four to six months.

In Hawaii, shrimp are already raised in cages and harvested by wet-suited workers. On the Isle Peninsula in Japan, the tasty, paper-thin seaweed called porphyra are cultivated in seaweed plantations. Dried and rolled flat, these squares of seaweed are called nori and become the crust for tasty rolls—nori rolled around cucumber, shrimp or fish-filled rice.

It is in Japan, where fish has been the staple diet for centuries, that the catching and processing of seafood has become an extremely efficient industry. During the last ten years, the Japanese have been sending a flotilla of 17 factory fleets to fish off the Alaskan coast. Ten concentrate on salmon, two set pots for crabs in the Bering Sea, and five others trawl for pollack. Each fleet is composed of smaller catcher ships, all of which service the mother-factory ship.

Below decks, the mother ship is a huge factory, operating 24 hours a day. Assembly line operations decapitate, cut off tails, eviscerate and filet pollack. The discarded fish bones, heads, tails and skin are ground and cooked. Using the heat from the ship's engines, this unappetizing stew is blast-dried into an odorless, protein-rich meal, packed in huge burlap bags and sold to Taiwan, where it is used as feed for "eel farms."

The ships' main product, however, is *surimi*, a protein-rich fish paste. Filets are cooked into a mash, which is battered by various machines until its odor, taste and appearance closely resembles that of moistened kleenex. The paste is then processed into two grades: a gourmet variety bleached white and a coarser yellow one with bits of remaining skin. Once packaged in globs, the *surimi* is frozen.

If this substance, almost 100 percent protein, could be flavored, squeezed out of a tube like toothpaste and dripped over rice or spread on crackers, the possibilities for developing fish as an international food of the future are endless. Protein-rich fish matter could be compressed into huge blocks and sold like cheese. Fish meal could be transformed to a kind of flour for use in baking, pie crusts or desserts. Fish matter could even be the base for protein tablets, ideal for space travel because they could be adjusted to supply all the daily nutritional needs.

However, most of present-day Western mariculture research is aimed at producing a steady harvest of fish for traditional dinner-table consumption. In the Soviet Union, for

example, underwater farms have been breeding oysters, deep sea scallops, octopuses, shrimps, crabs and algae. The yields are impressive: an acre of live boxes produces over 100 tons of fish and an acre of kelp plantations yields 24 to 28 tons of sea kale.

In this country, however, mariculture has focused mainly on gourmet seafood—shrimp, lobsters and oysters. Trout and catfish farms in Arkansas, Louisiana and Mississippi have been flourishing for 30 years with more than 1,000 catfish farmers raising 80 percent of the national supply. Most Americans, though, are too finicky to eat the mullet, tiapia and milkfish which, though raised successfully elsewhere, are too bland for American taste buds.

Most research here, like the experimental trout farm operated by the Public Service Electric and Gas Company in Hamilton, New Jersey, has concentrated on adapting mariculture to man-made alterations in the environment. The two steam turbine condensers of the coal-burning electrical generation station, which the PSE&G operates on the Delaware River, need to be cooled by about 450,000 gallons of water every minute. Afterwards, the discharged water is 12 degrees F warmer.

To help justify cost of using so much water the company researched ways to make the heated water profitable. Researchers from Trenton State College, Rutgers University and the New Jersey Department of Agriculture suggested that marine life not usually found in cool northern waters, such as shrimp, could be raised in the summer and fall; some cold-water species like trout would thrive in the winter and spring.

To get the project off the ground, a simplistic 30 by 90 foot pond was built with an intricate pumping system capable of recirculating 31,000 gallons of heated discharge water. Water is kept between 50 and 68 degrees F in winter for trout and between 75 and 98 degrees F in summer for shrimp.

During a five-year testing period five species were tested, including eels intended for export. But even scientific conditions couldn't cramp Mother Nature. The eels had to be discarded when the researchers could not prevent the big ones from eating the small ones.

Trout survived best, providing an annual yield of 26,000 pounds of fish. They have the lowest mortality rate and are susceptible to few fish diseases. This is important because only two drugs are licensed by the federal Food and Drug Administration to be used to control fish diseases.

Mariculture should rely on a system of natural defenses and environmental checks and balances to avoid the overkill use of antibiotics, which are presently abused in the factory farming methods standard for chickens and pigs. Ideally, future food should avoid the harmful chemicals, doubtful antibiotics and other toxins that have presently infiltrated our foods, ranging from dangerous red dye M&Ms to mercury-laden tuna fish.

Up to now the trout at the PSE&G facility have been growing about an inch every two

months and thriving on a diet of animal protein pellets. "I expect we are about two or three years away from deciding if we want to go commercial," says manager Mark Evans.

"I don't foresee taste as a marketing problem," he adds, "because it is not that different. Obviously, we can't duplicate what the fish eats when it's in a natural environment, but we can come close."

But these are all interim gestures. What would a real-life future seafood plantation be like? Taylor A. Pryor, president of System-culture Corporation, has developed a patented method for seafood on land. The first unit of his system is under construction in Hawaii. When finished, it promises to be eerily sci-fi in design and function.

Consider Pryor's vision of a day's "fishing": A production manager seated in a control tower scans 64 half-acres of concrete-sided reservoirs. Most of the four-foot wells are filled to the brim with coffee-colored brown phytoplankton. A few are blue. A glance at a computer verifies that the four blue acres had been drained and refilled with sea water. The computer also prints out when the farm's food source in each reservoir will ripen and be ready to be harvested.

Each reservoir has been previously programmed to receive the exact amount of liquid fertilizer. Out-flow water and the exact number of sunlight hours needed for the minute life to cell-divide have all been pre-programmed. The production manager checks the pH levels of the water, which can vary dangerously from hour to hour. Sipping a cup of coffee, the plankton manager flips a switch and begins scanning the history of every culture.

The two managers now review records. The director asks for the average densities of the previous week, correlates average flow rates and finally predicts oyster weight gains for the week. In the oyster packing plant a sample oyster inventory will be passed through high-speed sorting equipment. However, on this particular day the totals fall short of predictions. A mini-crisis results. The entire oyster operation system is reviewed, and the staff pores over computer print-outs. Finally, the shellfish manager discovers that spare pumps, a safety feature meant to back up the effluent recycle pumps, had been accidentally turned on. The resulting poor water conditions caused 24 million oysters to eat less.

Thirty percent of the plankton harvest had been wasted for a three-day period.

Sound surreal? It's projected that soon shrimp, lobster, and even turtle will be raised in similar installations, stacked in tanks of water 30 feet high and 160 feet long, and monitored by computers. Right now more than 100 large corporations, including Union Carbide, Dow Chemical, Sun Oil, Seaboard utilities, Ralston Purina, and Armour and Company are experimenting with some type of mariculture. And while frozen fish cakes may not have too much to recommend them now, in the future derivative fish products may be at least as appetizing, nourishing and tasty as present-day hamburgers. □

Planetary Chauvinism

You've heard of the great conflicts of the '70s: heads vs. feds, women's libbers vs. male chauvinist pigs, bussers vs. bigots, and plenty more. They're getting pretty boring, so it's time to move ahead to the big battle of the '80s: spacers vs. mud-ballers.

Spacers are the folks who plan to inherit the universe—which happens to be 99.9999 + percent space. Mudballers, on the other hand, think that planets are the only fit places to live. The extremists among them actually believe that planet Earth has a monopoly on mud fit for human toe wriggling.

We spacers don't have anything against planets, mind you. It's just that they aren't anywhere near as convenient as free space.

Let me illustrate.

Imagine that you've purchased, through the mail, ten acres of fairly level land in the limestone hills of Wisconsin. The real estate agent has shown you a photograph of the plot: an idyllic maple forest with violets and ferns sprinkled across the sun-dappled loam. Finally, you quit your job and set out to lead the "real" life. Bursting with anticipation, you and the real estate agent hike down the faintly marked trail to your new homestead. Visions of organic tomatoes and Alpine dairy goats dance in your head. But—what's this? A break appears in the forest floor. A chasm looms. Warily you sidle up to the edge. It's an enormous pothole with sheer sides all around. Getting in—or out—would require a hellacious ladder or a truckload of dynamite.

"Down there," the agent beams. "That's your land." You reach for a rock...

That's the bill of goods mudballers are selling. Planets are at the bottom of steep gravity wells. Even with advances in rocketry, getting onto and off of a planet isn't going to be as easy as driving to the nearest shopping center. Heck, even going very far over the *surface* of a planet isn't easy.

But in free space, trillions of people could live in a volume of space less than a thousand miles in diameter, possessing hundreds of times more land area than Earth boasts—and all of it prime real estate. No mosquitos, no remnants of chemical or radioactive pollutants left over from an era when people acted as if there was no tomorrow. Travel is cheap: inside the habitats, no point is more than a healthy walk from any other. If you want to visit a colony on the other side of the orbit, an energy-cheap ride of a few hours in your pressurized space van will do the trick.

Granted, getting on and off planets will soon be cheaper than it is today. Already, it takes no more energy to reach low Earth orbit than to make a trans-Atlantic flight. By the

year 2000 we could—the human race willing—be able to routinely ship millions of people on and off the planet. But it will always be far cheaper to travel a given distance in space than an equivalent distance on a planet.

And that's only taking into consideration planets such as our own, which—with only a small investment in local environmental control devices like "houses" and "clothes"—are already habitable.

We now realize that the composition of Earth's atmosphere, waters, rocks and dirt have all been altered by the existence of life. So any lifeless planet must first be terraformed, at enormous expense, before it is hospitable to human life. Will people ever go to that much trouble to build a habitat?

Okay, let's assume that transportation and terraforming become so cheap that a group of wealthy space moguls decides to terraform Mars. Let's suppose their biolabs are ginning

up a bunch of Burroughs-esque inhabitants of Barsoom to stock a big game hunting concession for bored sybarites.

When Mars Moguls Inc. asks for a zoning permit, the planetary scientists will raise hell. And they'll win. Here's why: we will value the knowledge Mars can provide far more than Barsoomland Fantasy Park.

After all, we have the technical ability to convert the Taj Mahal into calcium supplement tablets. We have the technical ability to build condominiums in the Grand Canyon. And we have the technical ability to convert every last snowy egret into pillow stuffing. But we don't.

But isn't it a lot of trouble to worry about non-living things? (That is, assuming no life exists on Mars.) Those humanoid bone fragments in Olduvai Gorge are non-living, yet we treasure them for the same reason we will someday treasure the great landmarks of our solar system, the cradle of an explosion of life destined to spread across the universe.

Terraforming planets with life is a special case. We've been terraforming Earth for centuries. A starving person might put a whooping crane in a stew pot. An ignorant or hate-filled person might shoot it for fun. Recently we weighed the snail darter against a dam, and the darter won. Thousands of years hence, with the resources of the universe on tap, reasonable people will consider the terraforming of living ecosystems to be vandalism.

And that applies to Earth. I don't care what human activity it is, people have a way of messing up planets. We'll learn someday.

But we aren't there yet. I propose we will someday cease to terraform Earth. Our planet will become a priceless work of art, a living museum, a cherished monument to be loved, studied and guarded. It will be a nice place to visit, but no one will live or work there. Meanwhile, we will flow across the galaxy, jump to others, change, grow, diverge. One day, far older and wiser, we may choose to return to our home and once again draw nourishment from our mother Gaia.

Some surprising things could happen to our planet if we really kept hands off for a few million years. Keep in mind that scientific advances make it almost certain that most of us will still be adventuring around the galaxies five million years from now. After that long in free space, we'll get a kick out of looking at the old hometown—Earth—again. ▢

Carolyn Henson is a co-founder and President of the L-5 Society, a non-profit organization devoted to making space colonies a reality in this century.



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Martian Chronicles

(continued from page 21)

Filming The Martian Chronicles

With constructions and makeup now in hand, director Anderson and executive in charge of production Malcolm Stuart set out to film the epic drama as smoothly as possible. "There were virtually no delays," Anderson says proudly.

The nature of the production, however, did provide a number of interesting hurdles for the cast and crew to clear. Special effects, for instance, had to be breathtaking while at the same time remaining as un-spectacular as possible. "The difference between *The Martian Chronicles* and *Star Wars* was that *Star Wars* was total fantasy," explains John Stears, "which gave me great creative freedom. *The Martian Chronicles* required that I stay within certain guidelines. I checked everything out with NASA and, therefore, all of our ideas are scientifically sound. This reality is then combined with the esthetics of the Martian civilization which is fantasy, but fantasy with a good foundation in fact."

Actor Nicholas Hammond also found his role in the production a challenge. As Captain Black, he is telepathetically robbed by the Martians. Memories of his hometown of Green Bluff, Illinois, are then physically constructed on the surface of Mars. His expedition is surrounded by the sights and sound of

ancient 1970s Earth, as well as the people who inhabited that decade, many of whom are long dead.

"That was quite a heavy role to get into," he states. "For one thing, the character and the situations in Green Bluff are taken straight from Bradbury's life. It's the one story in the book where Bradbury switches hats, going from science fiction to autobiography. I think it's accurate to say that Black is the personification of Bradbury in the story. That's a big responsibility for an actor to carry in a totally fantastic story."

"But the bigger challenge for me was trying to imagine how a person in the future would react to the 1970s as something being three decades in the past. Here I was in the futuristic film and I was the only character to be surrounded by my real life present which had to be my character's distant past. Talk about confusing."

The physical demands of Mars-on-Malta also led to intriguing situations. "Whenever you're in a show that has a lot of special effects," says Hammond, "there is a large margin for error. On the very first day, we had to pull off a scene wherein Black's ship lands on Mars. It was quite a complicated set-up. You had to show the entire Martian landscape behind the ship as it landed. You had to show the smoke coming out of the ship, plus you had all these fog machines going on down below to simulate the atmosphere of Mars. You had all these things happening at once. Michael Anderson Jr. and I were supposed to descend from our spaceship in this small elevator. It was to take us to ground level. At that point, the door was supposed to open dramatically and we were supposed to step out. Great."

"Everything is going smoothly. The cameras are rolling. The ship lands. The smoke is working. The fog is swirling. Perfect. We start to descend in our elevator and the cable holding it snaps. Our elevator just plummets downward. Luckily, it caught on something, the cable jammed and we skidded to a stop about two feet from the Martian surface. Meanwhile, Michael and I are tumbling around in the bucket, yelling and screaming in a very unheroic way. The thing stops dead and we managed to get the door open. We stepped out of that cart and we looked scared stiff. The cameras are still rolling. The director called *cut* and we were still standing there, dazed. The director walks up to us and says 'Nick, Michael, that was wonderful. You stepped out of that elevator with such great expressions of fear and apprehension. Great piece of acting.' We couldn't believe our ears. Acting? That wasn't acting! That was stark fear!! And that landing is the one you see in the film. They couldn't shoot it again because the elevator broke permanently. After that scene, we figured the rest of the show would be a cinch."

And, for the most part, the \$7 million project proved to be just that. "We had some small fiascos," Anderson chuckles, "but nothing serious. Darren McGavin, for instance, is an Earth colonist who opens a ham-

burger stand and decides to wear a cowboy suit to make the colonists feel at home. When the time came to shoot his scene, we discovered that his suit was the same color as the Martian costumes. We couldn't have that so we had his cowboy suit dyed. The next day, we discovered it had been dyed purple which is not exactly a standard cowboy color. We had to change it again.

"Another scene called for two priests, Roddy McDowell and Fritz Weaver, to talk with the old Martians, these glowing spheres of light that were to be added optically later on. That was a tough scene. For four hours, they had to speak their lines to a large rock. They were literally conversing with nothing.

"But we did have our inspiring moments as well as our silly ones." Jon Finch, for instance, plays a Martian as Christ. It's one of the most powerful scenes I've ever come across."

After nearly a year of production and post-production, *The Martian Chronicles* is now a reality. Everyone connected with the show is pleased with the results but no one more so than director Anderson. "We didn't attempt to make the book into a swashbuckling adventure. We didn't have to manufacture a sense of drama. The drama is present in the novel. It's a question of finding it, in that it's often overshadowed by the poetry. It's all there, however, it was just a matter of extracting it and placing it in the foreground for audience appreciation.

"The finished work is science fiction, yet it doesn't look like it. We tried to film it so an audience would not be aware that it's science fiction. We introduce the SF themes so gradually, we ease into the Americanization of Mars so subtly, that it's as if the viewer is actually transported to that planet as opposed to him sitting back and watching this spaceship story evolve. Mars doesn't look all that different than Earth. It's not comic bookish. We made this to be Ray Bradbury's *Martian Chronicles*, to do his work justice. If we hadn't already been to Mars and seen what's really up there, I think many people would consider this production to be science fact."

The Chronicler Returns

Curiously silent during the last 12 months on the making of the TV *Chronicles* has been Ray Bradbury. The world-renowned author has, in the past, publicly gone on record about the inadequacies of the Hollywood system in attempting to transpose literature to celluloid and has, in fact, had many of his works mishandled on both the large and small screens by over-ambitious but under-intelligenced writers and directors alike. After the shambling, big-budgeted *The Illustrated Man* of several years ago, Bradbury swore off filmdom for good. Now, with *The Chronicles* series, he has apparently returned to the film fold.

He has admittedly mixed feelings about his homecoming. "Tell everyone it's a good show," he says from his California home. "It's good. It's certainly better than *The Illustrated Man*. That film was dead on arrival.

(continued on page 63)

A SPECIALLY ILLUSTRATED EDITION OF A SCIENCE FICTION CLASSIC



THE MARTIAN CHRONICLES

Ray Bradbury
Illustrated by
Ian Miller

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Ian Miller's 28 fantastic drawings bring to life Bradbury's MARTIAN CHRONICLES, the sometimes eerie, sometimes poetic classic about the colonization of Mars.

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The background of the poster is a deep black space filled with numerous bright, colorful streaks of light, resembling meteors or star trails, radiating from a central point. A bright, horizontal band of yellow and orange light cuts across the middle of the image, serving as a backdrop for the title. Below the title, a perspective grid of green and blue lines extends from the bottom edge towards the center, creating a sense of depth and space.

STAR TREK

THE MOTION PICTURE™

“I don’t think that Christmas of 1979 can come soon enough,” says Gene Roddenberry, flashing a well-worn smile. December of 1979 is, of course, the scheduled release date of Paramount Pictures’ \$20 million-plus epic *Star Trek—The Motion Picture*. A decade in the making and planning, *Trek* is the culmination of the dreams of millions of *ST* TV fans as well as those of creator/producer Roddenberry himself. “It’s the ultimate *Enterprise* adventure,” he says of the forthcoming film.

The science fiction spectacle, which has been plagued by its share of problems, includ-

ing a major snag involving its eye-boggling special effects, is finally sailing along smoothly on the Paramount lot and director Robert Wise promises that “not only will we make our release date but we’ll surprise quite a few skeptics with what we put on the screen.”

Wise describes the film as “basically a mystery story. There’s something out there in space, prowling around in the dark, destroying everything in its path. It’s heading for Earth and it’s up to the crew of the *Enterprise* to stop it within a matter of days. You can’t see the thing, but you keep on getting these

horrible reports of its destructive powers. Finally, at the end of the film, you find out exactly what this force is and why it behaves so savagely.”

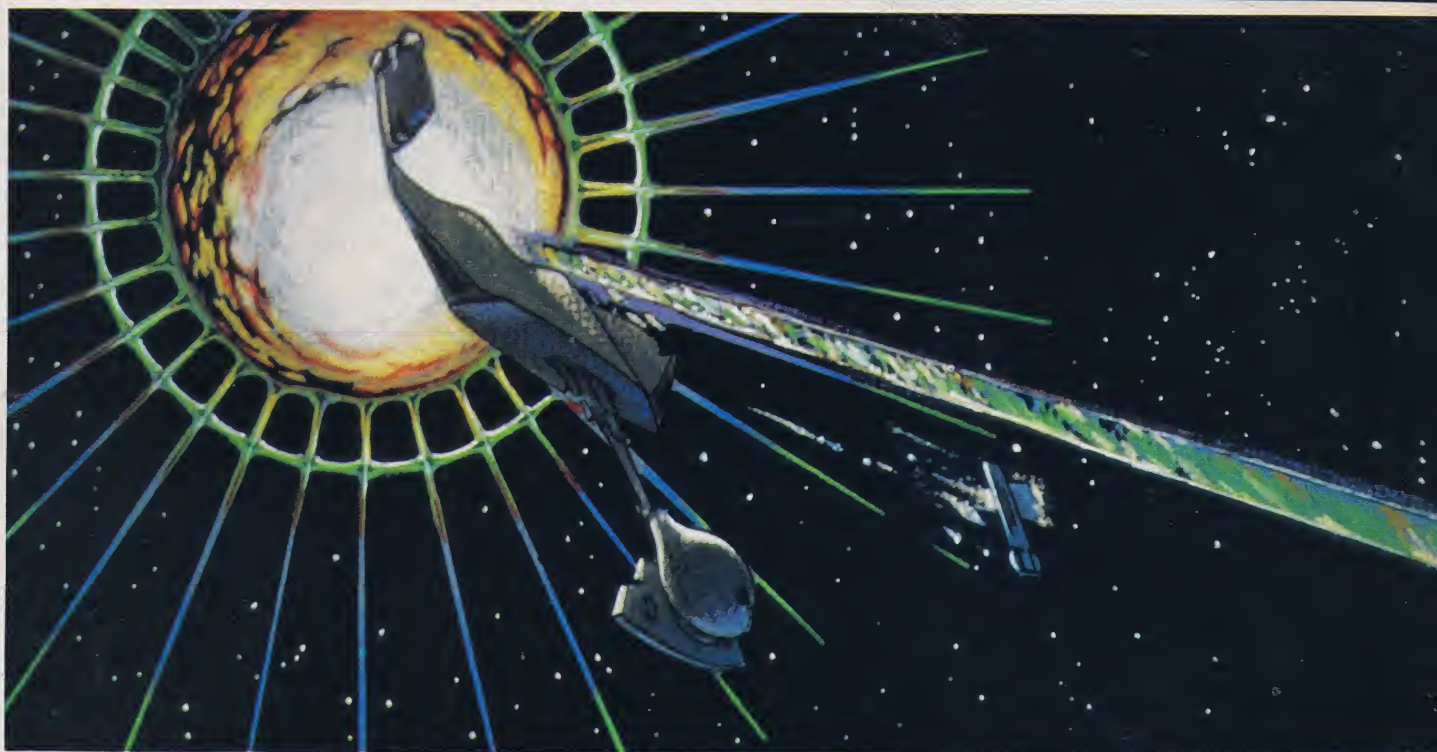
Although the actual physical identity of this marauding power is top secret at this point, Paramount has consented to provide an exclusive glimpse of the force’s origins in these pages. In *Star Trek—The Motion Picture*, the evil entity appears out of nowhere during the opening scene, colliding with a fleet of Klingon space ships. On the following pages are selections from the storyboard art portraying the thrilling first encounter.



After a decade of waiting, *Star Trek—The Motion Picture* wings its way to the widescreen. In these storyboards, art directed by John Vallone, the movie's opening sequence is portrayed. Above: A Klingon ship makes its way through deep space on a routine mission.



While performing a uniform maneuver, the Klingon crew begins to pick up strange readings on their bridge. There is some *thing* heading their way at an incredible rate of travel. The Klingons, still unaware of any potential threat, casually check out the intruder.



Bursting forth from the blackness of space, a vision of destruction appears of a magnitude unknown to any living creature within the boundaries of the Federation. Unprovoked, the killing machine lashes out at the Klingons. The warrior space voyagers attempt to defend themselves, but to no avail.



The Klingons are disposed of within minutes. A Federation outpost nearby monitors the skirmish via an audio scan of the area. They calibrate the killing machine's flight path and find that it is heading straight for Earth. Out to save the day is the valiant crew of the refurbished *Enterprise*.



Frank Herbert: **The** **Father of** **"Dune"**

The creator of "Dune" talks about his craft, his preoccupation with alternative energy sources and his work on the upcoming \$40 million "Dune" movie.

By MALCOLM BRENNER

Best known for his Hugo and Nebula award-winning novel *Dune*, Frank Herbert is the author of some 20 other popular novels including *Children of Dune*, *Dune Messiah*, *The Dosadi Experiment* and *Destination: Void*. A one-time newspaper man, logging over ten years with the San Francisco *Examiner*, Herbert today lives with his family on a farm in Washington state. One of his major projects is to transform his six-acre spread into an "ecological demonstration" with a five-year plan showing that a high quality of life can be maintained with minimal drain on the total energy system.

Earlier this year, it was announced that Dino DeLaurentiis would adapt *Dune* to the widescreen. Herbert is currently working on the screenplay of this long-awaited science fiction epic adventure film. His latest book, a novel, was published in 1979. Entitled *The Jesus Incident*, it was a collaborative work with writer Bill Ransom and based on the future universe created for *Destination: Void*.

FUTURE LIFE: Are you very busy at the moment?

HERBERT: You have no idea. I really should be upstairs right now. Normally I write four to five hours a day; recently it's been eight to ten.

FUTURE LIFE: What's the work you're completing before you begin the *Dune* script?

HERBERT: Two books, one fiction, one non-fiction. I'm not trying to be shy, but I don't talk about work in progress. The best advice I ever had, which I invariably give to would-be writers, is, you use the same energies to talk about it you would to write about it. You should be very jealous of those energies. Put them on paper, not on the air.

FUTURE LIFE: Everyone who has ever read your work is interested in the recently announced movie version of *Dune*. Are you at liberty to talk about it?

HERBERT: I can tell you what I know, but I don't know everything. I have no idea who's going to play what, except that Dino DeLaurentiis agrees with me that Paul should be an unknown, somebody who hasn't been on the screen before. We're looking for an important director, somebody with a superb track record. The problem is to find somebody who isn't previously committed. They are talking about a budget of up to \$40 million. It turns my head. I can't even think in those terms. I will be doing the screenplay; the film treatments, the rough outlines, have already been done.

FUTURE LIFE: How do you feel about working with DeLaurentiis?

HERBERT: I happen to be an admirer of his. I don't admire everything that he's done, and he knows that well! But he's a man who, when he puts his mind to it, has superb ability. He takes shortcuts, sometimes, but he's promised me no shortcuts with *Dune*.

He wants to do a classic, quality movie; I

quote, "to rank with *Gone With The Wind* and the equivalent." We've been very open with each other about this. I told him at the beginning I have misgivings about all of Hollywood, and not from any of the classic author vs. screen production points of view, because to translate a book to the screen is as though you were translating a work from one language to another. In a book, it's easy to create new concepts, because the reader can supply all the necessary nerve endings. Like radio; you can build a set on a page that no movie producer could afford. Given those restrictions, and an understanding of the problem, even then, because of the shortcuts filmmaking tends to take, you still have misgivings. One of the fallacies in Hollywood is that the only reality they need to worry about is: "Can you put it on the screen?"

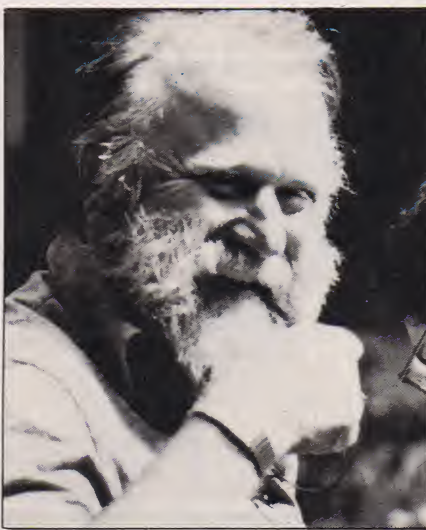


PHOTO: MALCOLM BRENNER

"... They are talking of a budget up to \$40 million. I can't even think in those terms. We're going to go for utter reality."

If it's on the screen, people will believe it. In Melies' day, this was true, but not any more. We have a far more sophisticated audience to consider, an audience conditioned by experiences Hollywood hasn't even picked up on yet. Like commercials. Have you ever thought about the conditioning factors involved in getting people to accept a premise in a commercial?

FUTURE LIFE: People tend to be more skeptical of what's on the screen because of all the garbage thrown at them.

HERBERT: Right. Yet another aspect of this conditioning is the advent of quick cutting. People today will accept the fact that you've gone to a different scene because a different scene has suddenly flashed up.

FUTURE LIFE: Will the *Dune* movie expand the special effects art form to capture your ideas, like the mile-long sandworms?

HERBERT: Oh yes. I'm no neophyte in this

field. I've worked as a TV news cameraman. I also doctored the script for Dino's new version of *Flash Gordon*. The original writer was good, but because he wasn't a science fiction writer, he made certain mistakes of verisimilitude which I was asked to clean up. The difference between the amateur and the professional in many fields is largely an attention to detail. With computer enhancement, we can mingle different layers of action, shot at different times, absolutely perfect in every detail, in terms of foreground-background relationships, the light sources, shadows, everything. The second unit can get a background plate, and a computer scanning of shadow and motion effects will give you a placement format for lighting the action in the foreground.

FUTURE LIFE: So even if the shot was hand-held, you can program the "bounce factor" into the computer?

HERBERT: Indeed you can. And you can relate what goes on in the foreground precisely to the background. I'm talking about an actual scene layout, and tracking motion of the lights, for example, which is now available to us.

FUTURE LIFE: These techniques will all be used on *Dune*?

HERBERT: I've been assured that they will. The essence of drama is that you believe it's happening to somebody. We're going to go for utter reality.

FUTURE LIFE: Your career as a writer began with newspaper work in cities such as Seattle, Portland and San Francisco. What got you into that field?

HERBERT: Natural attraction. It's a great way to get a general education, if you have a curiosity bug, as I have. If you follow up the things you're interested in, if you don't just skim the surface of a story, it's great.

FUTURE LIFE: Have you always wanted to write?

HERBERT: I started at age eight. I went back to one of the stories from my childhood about four years ago. My mother had saved it. Very childish. Interestingly enough, though, it had all the elements right in the lead: dramatic things about to happen, a protagonist who wanted something very badly, an exotic setting. Even then I instinctively knew enough to put the time of day and season in, so people wouldn't get their own ideas and flop over them later.

FUTURE LIFE: Your books are very detailed. How do you do research?

HERBERT: I call it "loading the system." It's almost as though you were putting all the information in a computer, but I don't mean by that to compare the human brain to a computer. You go out and find everything you can about the subject in question...

FUTURE LIFE: You interview specialists?

HERBERT: Yes, on a *quid pro quo* basis—favor for favor. They put out a lot of time for me, so I write articles or papers for them, do research. I say to specialists: "I'm an expert at organizing and writing coherent articles, translating the esoteric into general readership. And you, in turn, know some

Left: A spice container done by Chris Foss for a previously planned, unfilmed *Dune*.

things that I want to know. What do you want written? How can I help you?" Even early in my career, people were open and willing to communicate. Part of the success of the transaction process is having a good, clear assessment of what you can do. I have no false pride about this. I know what my major talent is. It's a tradeable thing. You'd be surprised at some of the names that have said, "Sure, come right in." I've had this ability since I started doing professional newspaper reporting at age 17. In a less skillful form, but I could do it commercially.

FUTURE LIFE: Where do you start building a novel?

HERBERT: I begin with the kind of a conceptual overview, which you might think of as an idea, but "idea" tends to misrepresent what a conceptual overview amounts to. Such an overview might be the one out of which the *Dune* trilogy grew; which was to do a book about the messiah impulse—the hero mythology in human societies. Well, that's a very big grab-bag. That umbrella will cover a lot of ground.

FUTURE LIFE: It's been heavily used, to say the least.

HERBERT: Yeah, but not in the particular way I chose, and that's the essence of how an idea is different from its realization. Most people think a story's the idea. It's not. It's how you develop it.

FUTURE LIFE: In the case of *Dune*, how did this development occur to you? Are you the type of writer who works more from the intellect, or the emotions?

HERBERT: I try to strike a balance. It's all right for a plot to have a message, but if no one's going to read it why waste your time? It has to be entertaining. I'm in the entertainment business and I've never, never mistaken that.

FUTURE LIFE: Do you aspire to Art, or should it be termed Literature?

HERBERT: To say yes to that, you have to believe your own publicity, and I assiduously avoid that. The only valid critic any art form has is time. Does it endure? And, obviously, I'm never going to know that—at least not in my present form! I always set out to do the most entertaining job I can, even for newspaper work. I recognized early that there is no such thing as an unbiased approach to any subject. The great myth of American reporting, that I'm just here to get the facts and won't even be in the story, is horse pucky. Every word you choose comes out of your own prejudices.

FUTURE LIFE: Could that same type of thinking be applied to our definition of objectivity in science?

HERBERT: Oh, absolutely. You see, science has built some marvelous straw men. One of them is emotion. Logic rejects emotion... yet logic rejects it emotionally! I say that you don't understand one without the other.

FUTURE LIFE: So where is the "objectivity" of science not misplaced?

HERBERT: When it's doing what it does best—solving problems, answering unknowns. Scientists tend to get on linear tracks

which dig a deeper and deeper channel, so they never see over the top. Our nation, our world, desperately needs more generalists. It's a matter of human survival, I think. We need people who are busy building overviews, people who say "The king is naked!"

FUTURE LIFE: Aside from entertainment, is that your job?

HERBERT: Oh yeah. I'm a yellow journalist. I've never avoided that label. In fact, I kind of revel in it. I love to turn over rocks and see what scurries.

FUTURE LIFE: What's your scientific background?

HERBERT: Math, physics, psychology, with some specially interesting sidelines: energy chemistry, micro-climates. Anybody in my field has to know what's going on in research and development. That's one of the reasons I'm installing a very sophisticated computer in my home.

FUTURE LIFE: Tell us about it.

HERBERT: Within weeks I'll have a ten-

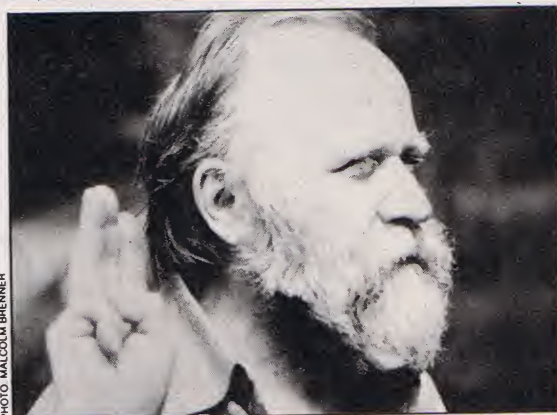


PHOTO MALCOLM BRENNER

and-a-half million byte system, and if you know anything about computers, that's leverage! It'll really be three computers in one, with three different, very advanced chips, each doing a separate thing. It's being programmed by a friend of mine, a superb technician, from the point of view of the needs of the operator, not from the technological viewpoint of the machine. It's going to be a very sophisticated typewriter and note filing system, but also will time-share with another terminal for my wife Bev to do our household accounts on. I write in the round, in the sense that a story kind of expands as I write it. I get ideas for this chapter back here, or that one up there... I make notes and slip them into folders. I then assemble the complete chapter later. With a computer, I can do that with extreme rapidity. I'm not fumbling for papers. The computer has a sophisticated word-processing program. I'll have a vertical format CRT with a variable separator line. I can have, say, three lines of notes at the top and the rest text, or three lines of text scrolling under and the rest notes. Also a fast-response "address of addresses" system which brings up notes if I forget the address. I won't have to wait to get to a position in the book. I'll go right to it.

FUTURE LIFE: Sounds like the ultimate writer's tool!

HERBERT: It is. I'm designing it as we go along. It'll have a variable dictionary that will respond to my idiosyncracies. I tend to talk to the page. I'm aware that the best use of language talks to the ears, not the eyes.

FUTURE LIFE: The texture of the writing...

HERBERT: ... is oral, rather than strictly visual. I tend to make homonymic errors, writing "there" for "their," for instance. My dictionary will flag that. At the end of the day all I'll have to do is scroll through the copy and check everything where the cursor is blinking. Makes the process of correction vastly easier; takes the tiresome part out of writing! I'll just be able to sit there and create.

FUTURE LIFE: Do you foresee such devices coming into widespread use?

HERBERT: A necessity. I foresee all kinds of specialty writing where the program takes care of the incidental bookkeeping. Writing a screenplay, for example, where you have character names and a split page: dialogue on

"Our nation desperately needs more generalists. We need people who are busy building overviews, people who say 'The king is naked!'"

one side, visual on the other. That indexing can be handled automatically by a computer so you don't even have to think about it. See how that would speed you up!

FUTURE LIFE: Arriving at the topic of actual creation, when you get down to putting words on the page, how do you do it?

HERBERT: I look at it as a schizophrenic process. You are playing the different roles of the characters you're writing about, and you'll stop and look at the scene the way you would any scene, and you'll play it on the screen of your mind. It's more of a photographic process. I think of the reader's eye as a camera that I control, so I can move you in close to look at a detail or back for an entire scene. There are not only sights and sounds, there's wind, there's temperature, there's smell—all of the things you would expect in any ambient atmosphere. You select from them, and play them on the tape which is the reader.

FUTURE LIFE: How do you control information which doesn't fit into a pictorial format? Philosophical abstractions, for instance?

HERBERT: We have more senses than our eyes and ears. The best way to do it is through a character, his response to his environment. Because a story has to be something that happens to people. Philosophical concepts can be

made very immediate by the influence of their consequences on people. I was playing that game all through the *Dune* trilogy. We have one idealized version of a philosophy: the great leader will save us from ourselves! My reading of history says that heroes, great leaders, have been disasters.

FUTURE LIFE: So the man on the white horse turns out to be wearing black armor?

HERBERT: Invariably. The great leader has wrought havoc, and that was the thematic approach I took in the *Dune* trilogy. First, build up a very real, imaginable hero, out of the classic mold, whose own intentions are the best. An admirable person. Then show the clay feet as the power is magnetically attracted to him. I think of the *Dune* trilogy as being one book. Parts of *Dune Messiah* and *Children of Dune* were written before *Dune* was finished. The plot of all three was laid out before I began to write *Dune*. Our culture demands that the hero be, and remain, admirable. So, if you show the degeneration that comes with the execution of power, this is considered unacceptable.

FUTURE LIFE: In your work there's frequently the theme of people versus the power structure, a common one in science fiction. Could this be because science fiction writers tend to feel alienated from their times?

HERBERT: No, I don't think we feel alienated. We just have a different view of our times. You're looking at motion from a great distance, so you can pick out things that aren't readily visible to other people. I think I have a clearer view, based on the accuracy of my predictions, of what's going on in the world; whether it's an absolute view, I would be the last one to pretend *that!* I only know it works. *Dune* is a prediction come true. Read the headlines. Back in 1948, I was driving an "economy" car and warning people about our dependence on a single, scarce resource—petroleum. The spacefaring Bene Gesseratt culture's need for the clairvoyant worm-spice was written as an analogy to our dependence on the oil cartel, on an energy source that can be controlled by a very small group of people.

The historic term for this is "hydraulic despotism," a term that comes to us from the Mid-East, where water is subject to the control of local tyrants. Now, a cartel doesn't have to be set up with a document or even a handshake. It's a group of people who have a common interest in a common behavior. The problem isn't the Arabs, it's our dependence, and the historical consequences of such behavior are predictable, and usually disastrous. We have the knowledge and technology right now to extract oil from shale, using lasers, for the same prices we're paying. Why aren't we doing it? Because certain powerful vested interests would squeeze everything out of us if a sufficient number of politicians could be convinced they would profit by it. I'm certain some of our politicians are in the oil cartel's pocket. . .

So I see the movement of forces in our society in a different way than most people. I say things, and people are shocked. Like that the legal profession has raped our society. It has. It has weakened the society to a

dangerous point. I get police and medical people angry with me because they think I'm attacking them. I'm not. I'm describing a psychological process. The process of self-preservation, you might call it; the unconscious behavior all people engage in which maintains the necessity for their speciality. The things police do to maintain crime. The things doctors do to maintain the need for their ministrations. You occasionally get an enlightened member of these groups who recognizes this behavior. I'm not attacking people. I'm describing a behavior whose consequences are predictable.

FUTURE LIFE: Do you feel people's behavior can be predicted?

HERBERT: Not entirely, no. But I think certain patterns of behavior betray very clear consequences. It's the background of great tragedy. It isn't hard, for example, to see the hollowness in statements such as "you make me angry." If I'm angry, I make me angry. Every person participates in what's happening to him or her to some degree or other. There are exceptions to this. If a meteor strikes, it's hard to acknowledge your participation in *that*, except for the bad choice of being born on this planet. But there are other categories of behavior which clearly involve at least unconscious personal choices. We have labels for these things: "the rat race."

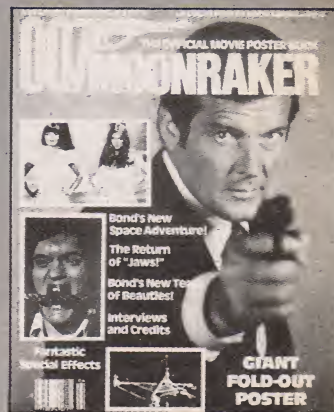
FUTURE LIFE: Applying this ethic to our oil habit you mentioned earlier, you're actually involved with developing alternative energy systems, aren't you?

HERBERT: Yeah. I'm having a solar collector system installed in the house and greenhouse that will supply about 15 percent of our energy. With a group of associates, I'm also developing a new type of windmill, based on the squirrel-cage principle, but with some improvements in aerodynamic design. We took a close look at the problem of heating homes and came up with an extremely simple, yet *new* answer. When is a house losing the most heat? When it's cold and the wind is blowing, inducing a wind-chill factor on the building. Well, why not let the wind turn a generator that warms the house electrically? The harder the wind blows, the more it heats, and the heat-loss curve flattens out. We have a prototype of this windmill mounted on a truck chassis with a calibrated speedometer and we make our test runs on the highway.

FUTURE LIFE: Since we're talking about energy for the future, what are your feelings on nuclear energy?

HERBERT: I'm vehemently opposed to it, because it's a damn dirty thing to do to our children. The irresponsibility of leaving large quantities of dangerous waste products for our descendants to cope with conflicts with the ideals on which this nation was founded. The cost-accounting hasn't been done yet, and we'd just be trading one form of easily dominated dependence for another. Nuclear centralization makes shutdowns more crippling, because so many people depend on the energy, and makes the system far more vulnerable to terrorists. I'm for decentralizing our energy generation.

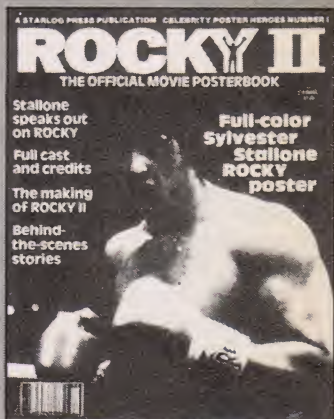
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The New Season Brings Science Fact and Fiction

Le Guin's *Lathe* To Air This Fall

The *Lathe of Heaven*, Ursula K. LeGuin's popular science fiction novel about a man whose dreams literally come true, will be televised nationally as a two-hour telefilm by the Public Broadcasting Service this fall. Produced by the Television Laboratory at WNET/Thirteen, New York, the film is being presented as a pilot for a proposed anthology series dramatizing works of "speculative fiction."

Set at the end of the 20th century, *Lathe* concerns the plight of George Orr (Bruce Davison), a hapless young man plagued by frightening nightmares. What makes his nightmares even more disturbing than usual is that whatever he dreams comes true, altering futuristic reality. Orr begins therapy with a psychiatrist, Dr. Haber (Kevin Conway) who, rather than curing Orr, seeks to exploit his amazing power. In a world where the polar ice caps have melted as a direct result of pollution, Haber attempts to have Orr dream up fairly idyllic realities that will send the world spiraling into a Utopian state. Needless to say, the road to Utopia proves rockier than Haber bargains for.

Made possible by a \$740,000 grant from the Corporation for Public Broadcasting to the Television Laboratory, *Lathe* was co-produced and co-directed by David Loxton and Fred Barzyk and also stars Margaret Avery and Nikki Flacks.

Although the locale of *Lathe* is designated as Portland, Oregon, the actual telefilm was lensed in the Dallas-Fort Worth area over a five-week period starting last spring. Originally, the show was slated for an Oregon location shoot but those plans were quickly abandoned.

"We arrived at this decision (to film in Texas) for two major reasons," Loxton explained during the filming. "Number one was weather. The climate is far more temperate and reliable in Dallas-Fort Worth than in Portland in March and April. Secondly, the story takes place in the future, at the end of the 20th century, and Dallas-Fort Worth is one of the most modern and futuristic areas in the nation."

During the shooting schedule in the southwest, key episodes were filmed at such diverse locations as the ultra-sleek Dallas City Hall, the futuristically designed Hyatt Regency Hotel in Dallas, the new Dallas-Fort Worth airport complex and the Tandy Center in Fort Worth. The cast and crew then left the Texas area, journeying to the Pacific northwest for additional shooting in and around Portland and San Francisco.

PBS has high hopes that *The Lathe of Heaven* will rekindle the waning interest of

television viewers in the realm of "speculative fiction" (known in some circles, still, as "science fiction"). To assure that the quality of the finished film matched the producers' hopes, Ursula K. LeGuin worked closely with the production team on the adaptation.



George Orr (Bruce Davison) has his dreams monitored in futuristic psychotherapy.

"Nova" Gets Down To Earth

Nova, television's only regular science series, will return this fall with a decidedly earthbound look. Spotlighting the world around us, *Nova's* sixth year will concentrate on the human side of science, delving into such topics as ecology, medicine and psychology. Emanating from Boston's WGBH and shown throughout the country on local PBS stations, the series will mix a few updated re-runs in with its first-run eye-openers. Science buffs may look forward to the following shows in the fall of 1979:

A Plague on Our Children (to be telecast October 2, 1979): This special, two-hour opening episode focuses on the stories of dioxins and PCBs, two widespread, controversial poisons. The show will explore both sides of the toxic dumping issue, taking *Nova* viewers across the country, from rural America to Love Canal to the nation's capital, where decisions must be made to cope with over 30,000 poison dumps in the United States today.

Life on a Silken Thread (October 9): Co-produced by German Educational Television, *Thread* examines the world of spiders using time lapse photography, slow motion and the electron microscope.

Sweet Solutions (October 16): A film portrait of an extraordinary material—sugar. Its history, its uses (past, present and future) and its mythology are profiled.

Icarus' Children (October 23): This up-

dated re-run spotlights California scientist Paul MacCready who designed and built the Gossamer Condor; the first airplane to fly across the English Channel using manpower alone.

Race for Gold (October 30): Concentrating on the Olympic athlete here and abroad, this film examines the role that science and technology are now playing in the development of Olympians.

All Part of the Game (November 6): As more and more people participate in rough-neck sports, more and more injuries arise. In response to this cause and effect phenomenon is the development of *sports medicine*: a field as distinguished by its attitudes as by its expertise.


A Mediterranean Prospect (November 13): The Mediterranean Sea is said to be dying, a legendary body of water surrounded by an unfeeling industrialized world. Yugoslavian marine biologist Stjepan Keckes defends the Mediterranean from raw sewage and industrial waste in this ecologically oriented episode.

Appropriate Technology (November 20): In India, the government under the watchful eye of Prime Minister Morarji-R. Desai and Industry Minister George Fernandes is pursuing an aggressive policy of development of small-scale, decentralized industry. It's all part of the Appropriate Technology philosophy; an idea considered by many as the only practical answer to the problems of Third World development.

Ironbridge 200 (December 4): 1979 is the 200th anniversary of the world's first iron bridge, cast at Coalbrookdale in England and built across the nearby River Severn. *Ironbridge 200* reconstructs the beginnings of the Iron Age and traces its effects on modern history.

The Case of the Ancient Astronauts (December 11): This re-edited repeat explores the theories of von Daniken and others concerning alien visitation during Earth's early history.

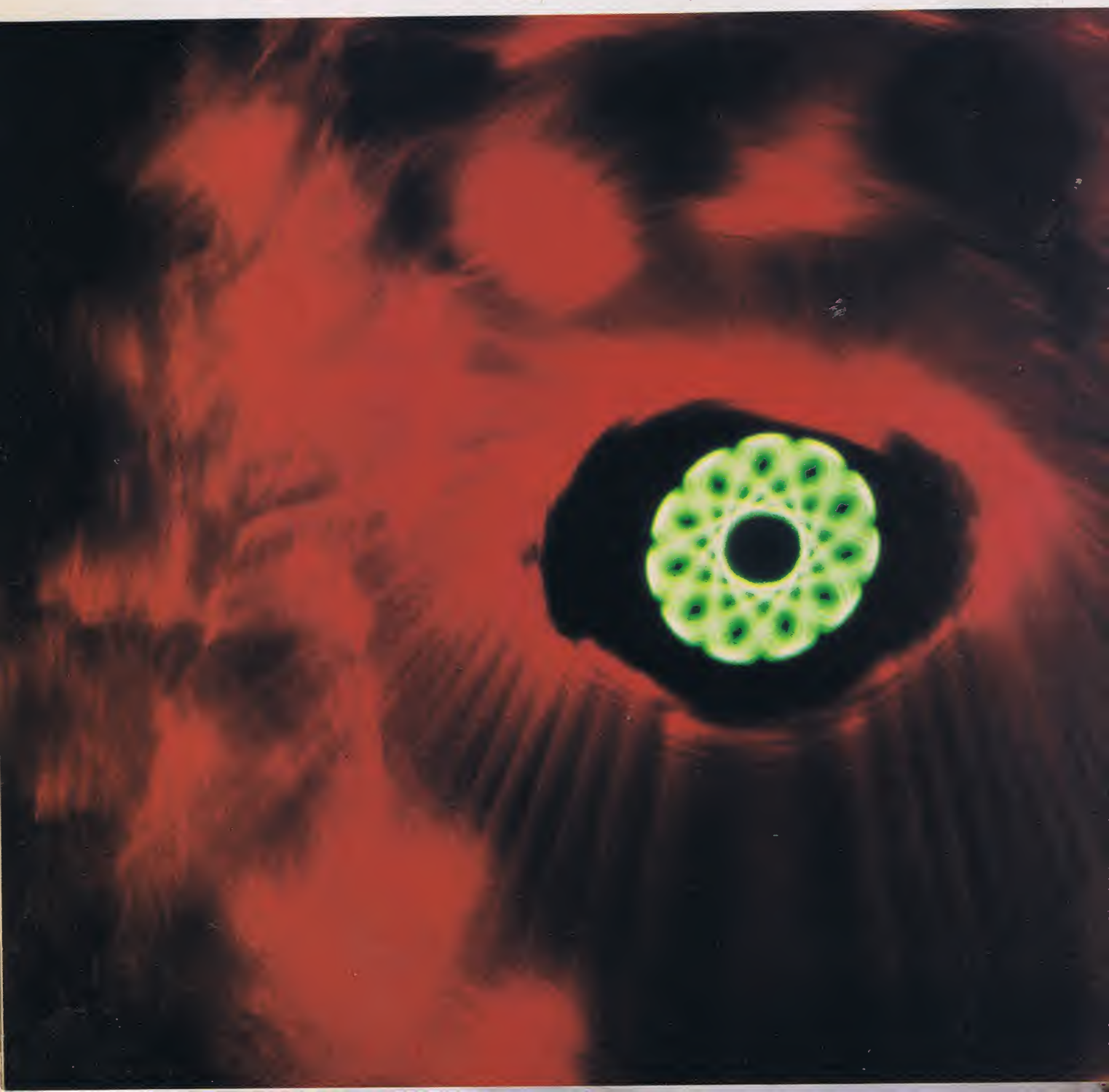
Blindness: Five Points of View (December 18): A special 90-minute presentation looking at the experiences of five individuals who are victims of diseases which cause blindness.

Beginning January 8, 1980, the second half of the upcoming season will commence, highlighted by episodes on hepatitis; Edward Teller, the "Father of the H-Bomb"; medicine in Nigeria; bowhead whales; salt water bays; science of the 1970s; locusts; hypertension, high blood pressure and heart disease. 

George Orr and his psychiatrist, Dr. Haber (Kevin Conway), in a Utopian nightmare.



Laser



ium



PHOTO RANDY BAER

Ivan Dryer may be the D.W. Griffith of multi-media. Intrigued by experimental laser images, he began the world's first commercial laser showcase. His plans for the future include an ultimate entertainment trip.

By MICHAEL CASSUTT

Just before showtime the rotating laser beacon atop the pyradomed theater begins to flash. Brilliant spears of emerald light stab at the evening sky. You'll have to hurry, but there's still time—

The pyradome is a marvel, the only one of its kind in the world—so far. It looks like a 21st century Pyramid of Cheops that somehow swallowed a balloon. Inside it you recline on a contour couch, seemingly cut off from the rest of the audience. Music swells beneath and above you as the laser projector rises into the middle of the dome.

You wonder how your parents could possibly have been entertained by simple flat screen movies shown with 19th century technology, because, after all, this pyradome laser show is the ultimate trip. . .

This is the dream of a young Californian named Ivan Dryer, founder and president of a company called Laser Images. Laser Images specializes in a whole new field of entertainment—beyond mere words on a page, or sound, or sight, it's focused on the area where art and technology overlap. Some practitioners call it "mixed media," others use the term "multi-media" (someone will invent a better name), but whatever the label, laser shows may be as much a part of our future life as films are today. And Ivan Dryer may be the D. W. Griffith of multi-media.

Dryer's Laser Images, based in the Los Angeles suburb of Van Nuys, is the producer of the highly successful "Laserium" shows currently playing at theaters and planetariums around the country. The laserium shows have evolved from relatively simple—though always visually striking—sets of abstract laser-produced images matched to a soundtrack, to complete shows of image and music with far more sophistication: the images dance and fly and are beginning to tell

stories. The shows now require the talents of a trained "laserist" who actually performs up to 70 percent of what appears on the screen. Note the parallels to the history of movies, which progressed from lantern slide shows to silent travelogues to actual narratives.

"In the age of television," Dryer says, "you can no longer educate or entertain people simply by giving them facts and events. You have to *excite* them with the essence of a concept, and you do that with vision, with sound, with the senses. The senses are the doorway through which information comes, but first you have to open that door. That's what something like laserium does."

Dryer isn't an avant-garde theorist. He's paid his dues. "I come from film, where for ten years I did literally everything there was to do: writing, directing, editing, photography, sweeping up. I did documentaries, educational films, commercials—most of my recent work was commercials—and the last thing I worked on was a feature." That was *Executive Action* (1973), a docu-drama about the plot to kill President Kennedy. Dryer worked as documentary editor for the film.

He had an ongoing interest in the future, however, and in the interface between science and art. "I used to read all the science fiction I could get my hands on. I was a great fan of Heinlein, Pohl, Sturgeon, all the rest of them, when I was growing up in the '50s. I was steeped in that, and in UFO lore. I was a big investigator of UFOs. . . I was turned on to all of that.

"And I was into science. I've been an amateur astronomer since I was 12 years old . . . in school I majored in astrophysics initially, and eventually changed to film when I discovered that I was more interested in the poetry of science than the mechanics of it. The training stands me in good stead now, when I have to be concerned with hardware."



Dryer's office reflects his interests. Astro-nomical and science fiction paintings hang on the walls and the shelves are full of various scientific journals.

This early interest in astronomy led him to a job as a guide at the Griffith Park Observatory in Los Angeles, an association which was later to pay off.

His interest in lasers, and in their potential for entertainment, began in 1970. "I saw some pictures taken by a CalTech physicist who had been messing around with a laser in off-hours and found that different patterns could be made with an helium-neon laser or a helium-argon laser. She took some of her photographs and displayed them at an Art and Technology Conference, which took place at USC in November of 1970."

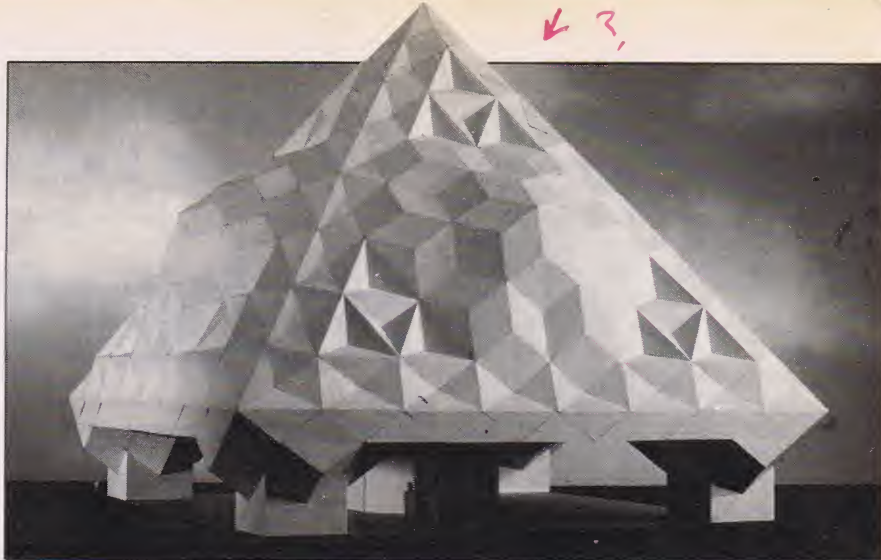
Dryer and another filmmaker got themselves invited to a demonstration. "I was always interested in abstract film—and still am—and I saw this as potential material. So the two of us went out to the lab and filmed a whole lot of imagery off the wall, literally off the wall. I was sitting there with the camera going and I didn't know whether to shut it off or not, because *all* the stuff I saw was tremendous. I was really blown away when I saw it, but that was a clue right there that this was not a film medium, because there was no way film was ever going to capture the incredible electric intensity of laser images. You could practically see them with your eyes closed, all this pure color."

In Dryer's projector, as it developed, a beam of white laser light the size of a pencil point is aimed at a prism, which breaks it into four colored beams—red, blue, yellow, and green. These colors are in turn directed to mirrors or lenses in a complicated projector, and it is the programmed motion of these lenses and mirrors that gives the intense laser images shape and movement.

But you couldn't put laser projectors in theaters—then. Dryer's best possible showcase was a planetarium. Now was the time for him to take advantage of his long association with Griffith Observatory.

He worked up a presentation, which impressed the programmers at Griffith—but not enough. "They just didn't think it was worth taking a gamble on at the time." By now the CalTech physicist had dropped out of the project, but Dryer didn't give up. "Finally, in 1973, I got hold of a krypton laser, like the one we use now. I arranged another demonstration and invited about a dozen people to the lab. The only one who showed up, luckily enough, was the director of the Griffith Observatory. He saw the demonstration again, and was really turned on. He got permission to let us set up and do a show, which we opened on November 19, 1973. It took three years, but it finally got in, and it was literally an instant success."

With over seven million paying attendees in the years since, Dryer's laser shows have continued to be successful, with the original "Laserium" followed by "Laserium II," "Laserock," "Laserium '79," and the latest, "Laserium-Starship." Current projects include "Light Years," which will be based on



Dryer's proposed pyradome—the media temple of the future featuring the ultimate in technology.

fifteen or more of the biggest hit records in rock (including the Doors' "Light My Fire," the Rolling Stones' "Jumpin' Jack Flash," and Led Zeppelin's "Stairway to Heaven"), and, still in the planning stage, a combined laser and 70mm film show.

Dryer has had his share of obstacles to overcome, notably with various planetariums around the country. He feels many are not well-equipped, technically, to present the spectacular shows that will attract wide audiences. Some planetariums have asked Laser Images not to offer them any more shows, since they prefer to stick with their traditional programming.

"I think many planetariums are beginning to recognize that their programming philosophy should change." It remains one of Dryer's ambitions to do a scientific planetarium show—perhaps as a combined laser/70mm event—but first, he says, "Planetariums are going to have to get into film . . . They need to recognize that education is not only the dissemination of information . . . there is a whole other part of people that needs to be addressed, and that part has to be addressed experientially, not intellectually."

"As I see it, lasers are going to become less abstract and more representational—and the technology of lasers is moving in that direction. We're trying very hard to make our images more 'solid,' to represent shapes that are in the real world, or that are in an imagined world but are identifiable as something more than totally amorphous blobs or spirographs."

"At the same time, film, by the very nature of the medium, is becoming more abstract. So when you go to *Superman* you're not interested so much in the storyline—that's not as important as the special effects."

There are still some major technological problems to be solved before this ultimate melding of laser and film can come about. According to Dryer, holographic cinema—laser-generated three-dimensional "film"—still lacks three fundamental technological breakthroughs, almost as fundamental as the development of holography itself.

"The first is that you have to be able to present the holography in full color, which some people are working on, but in still images.

The second is, you have to make the images *move*. And third, you have to project those images in space.


"I keep hearing that a lot of people are on the verge of presenting holography in space. As far as I know, that's hype. Who knows?"

With or without true holography in space, Dryer will be busy in the years ahead. "With the advent of videodiscs and large screen TV projectors, film in your neighborhood cinema is not going to be the same any more. . . you're going to find people very reluctant to leave their home media centers. Instead of having a TV set they'll have a giant wall-screen TV that will give them about the same scale entertainment as the neighborhood theater, only they can stay home, save gasoline, and not get their feet sticky. And they'll prefer to do that because they'll have their choice of very inexpensive programming from pay TV, cable TV, or videodiscs where they can *buy* a movie for fifteen bucks."

Entertainment that will draw people out of the house in the future "will have to be so grandiose that they could *never* reproduce it in their homes."

What will these grandiose bijous of tomorrow be like? "There will be very few of them, and they will be much more expensive to build, but these 'pyradomes' or their relatives will become 'media temples'." A pyradome is a marriage of a dome and a pyramid that will feature all the best state-of-the-art techniques of planetarium-style laser projection and 70mm film. The acoustical and visual bugs haven't been completely worked out yet, but Dryer insists he *will* build at least one pyradome.

The pyradome is just a part of Ivan Dryer's vision of the future of technological art. "Directly and indirectly, the things we've been doing with planetariums, and films like *Star Wars*, *Close Encounters* and *Superman*, are preparing the human race to move off the planet. And I see us doing that."

"The ultimate trip? It's a full spherical dome in a space colony, at zero gravity, where the audience is actually floating in the images. We'll literally be able to fly, and that's what all this is about—getting people to fly." 

I have a sense that there's going to be a big comma, or maybe a semi-colon in 1981," says Robert Fripp. 1981 is the year Fripp envisions as being a linchpin for humanity, leading either to doom or salvation. "It will be quite evident to the population at large that something irrevocable has happened to change the cultural milieu."

"Any number of things can bring about this change," he states in a soft-spoken, British accent. "It might be another Three-Mile plant spreading radiation throughout the eastern seaboard. Or it could be the collapse of American currency. It could be a real nice shake which puts the whole of California under the Pacific, or an energy crisis, which I think is inevitable."

Robert Fripp is not a science fiction writer, nor is he a fatalistic futurist or a radical scientist. Thirty-three-year-old Fripp is one of popular music's most famous visionaries; a thoroughly original guitar player, respected record producer and reticent performer. The founder of the legendary '60s British band, King Crimson, Fripp is also a schooled speculator of future trends. In fact, Fripp is quite obsessed with the future.

He feels that, in contemporary society, a performer must make music for more than mere entertainment value; music must prepare the world for the future. "We are at the beginning of a new mutation," he says, sitting in his N.Y. management company's office. "It's probably as significant as the change from Neanderthal man to homo sapiens. It involves a new kind of perception. People with the capacity for this new kind of perception are alive in the world at this moment. Often we call them geniuses or freaks. People with that different kind of perception and not having had that perception validated now risk being institutionalized."

Although Fripp makes no claim to that special status himself, he does believe himself to be charged with some special sense of purpose. Quitting the rigors of rockdom in 1974, he gave up the music world for three years, resurfacing in 1977 after a long stay at the International Academy for Continuous Education in Sherbourne, England. Through the teaching of the late J.G. Bennett, founder of the Sherbourne school, Fripp focused and refined his guitar playing and songwriting, while redefining his thinking. As a pupil of the mystical Russian philosopher Gurdjieff and his disciple Ouspensky, Bennett taught a school of thought which combined intellectualism with faith, Eastern techniques and Western ideas. The education was tough and disciplined, but it was meant to prepare students like Fripp for service to the world during a time of possible disaster.

Fripp decided to serve the world through music. And so, guitar in hand, he attempts to make a dent in modern thinking. By Fripp's reckoning, today's world is divided into two camps: that of the dinosaurs and that of the gazelles. The dinosaurs are anything huge and unwieldy; structures which demand a large scale organization, power base or source of energy to run them. The gazelles are just

Futuristic perspectives in today's music

By BRAD BALFOUR

Robert Fripp's Frippertronics



PHOTO COURTESY POLYDOR RECORDS

the opposite; small, mobile, intelligent units which are self-contained, decentralized and run on very little power.

"The size of the organization we have at

the moment," Fripp says, "the dinosaur, is in no way appropriate for getting us into the 21st century. A small unit of organization which is more mobile and intelligent is the type of

structure we need to move us forward; not only in terms of bureaucracy, government departments or rock and roll groups on the road, but also in purely human terms. Some people today are very definitely dinosauric in their own attitudes. They need large, unwieldy structures of which they can be a part. Because we can talk and logically see how the bureaucracy and governmental structure in America is so unwieldy, it will inevitably break down under its own weight.

"The systems we are talking about, although they have their own intrinsic qualities, are primarily *human*. Any *mechanical* system inevitably runs down. So how can we upgrade this process? Well, this is where man comes in, life comes in. A solution demands a new kind of human being."

Fripp believes that the use of parallel organizations will lead to the creation of a new human being. "Allende in Chile was trying to create a parallel civil service so that the normal civil service creaked on without doing too much while the parallel civil service actually did all the work," Fripp says, explaining how parallel organizations eventually render established structures useless. "He and Stafford Behr were trying to create a government based on cybernetic principles.

"The ancient Egyptians, I believe, had an acknowledged dual system so that they had their civil service which *thought* it was the civil service and the civil service that actually did the work."

Fripp is currently attempting to implement the dual system principle in his music. These days, he is working at dealing with man-the-machine (the formal structure of man in society) as well as man-the-spirit (the parallel structure) through his melodies. Using insight learned and shared with synthesizer aficionado Brian Eno, Fripp has applied repeating tape loops to his style of playing and dubbed it Frippertronics.

"I see the human body as a machine," he explains. "There is a level of our existence which is fairly mechanical. This just doesn't apply to the body per se. This mechanical element is in our thinking and our emotions as well. If you like, you can say that sentiment is that mechanical part of our emotions, for example, and *feeling* is the vital part. There's a difference between going through one mental process, the automatic procession of thoughts, and another one called, let's say *mentation*, when one is actively thinking. Man is a machine, in a sense, but he needn't work on a mechanical level."

Through Frippertronics, Fripp is attempting to draw the listener into his music on a totally revolutionary level. Through the use of live playing along with repetitive tape loops, he seeks to alter the perception of his listeners, introducing them to hypnotic sounds that exist both in a foreground and an ambient sense. "Frippertronics exists because of a simple piece of technology," he states, "and proceeds through repetition. Ouspensky had this notion of eternal recurrence, that one simply repeated one's self time and time again. I suppose this would be analogous to the karmic wheel. It can also be viewed in a

different way which I think Eno was trying to express with the Oblique Strategy: 'repetition is a form of change.' Repetition needn't be duplication, but in order to avoid repetition being purely mechanical, it needs an input of higher energy, or, you might say, attention."

When Fripp and Eno apply this concept to their guitars and synthesizers, they concoct lush repeating sequences which shift and flow like undulating waves. In one sense, Fripp's manner of creating music is science fictional in that science fiction writers use conventional literary rules in order to construct worlds that are totally alien and/or futuristic.

Both Fripp's manner of working and attitude towards recording are unique in today's music world, resembling at times a solution to future shock; the latter being a condition where one is unable to adjust to the onslaught of ever-increasing technological innovation. "In a *normal* situation," Fripp smiles, "like making a record, when something goes wrong in the studio, one would *normally* say something like 'what a disaster.' For me, however, an unexpected happening is a remarkable creative opportunity. It's the opportunity to ride what I call the dynamics of disaster. At that moment, preconceptions have to be abandoned. It's a totally creative situation. You have to get involved and ride on the repercussions of the input you generate."

Fripp put this type of mental gymnastic to work on his recent solo LP, *Exposure*.

"In the final two days of recording my album," he recalls, "I tossed a coin three times; on two occasions, to determine a final mix, on the third to determine whether or not to include a specific vocal. More and more, I live my life in an actively hazardous way. Of course, I make plans in a normal way, but when a situation comes up which obviates them, I certainly don't consider myself totally fixed to the mechanical situations I've devised."

Fripp envisions his *Exposure* solo LP as being the first part of a consciousness-raising trilogy that will alter the standard of rock and roll. By 1981, he plans the release of *Frippertronics* and his ultimate commercial assault, *Discotronics*—the union of disco and Frippertronics.

This is Fripp's way of preparing for the next Epoch, the period wherein humanity will choose life or death for the planet. "To get into the new world," Fripp says, "is, for me, very much a cooperation between ourselves and a high level of intelligence."

To Fripp's way of thinking, his training makes this cooperation with high forces, or synergy, totally possible. "In terms of developing a new kind of perspective, a new kind of perception, a new development of the inner ear must occur." And that, according to Fripp, is where Frippertronics comes in. "It involves active listening," he insists. "One can't hope to be involved with any kind of new world unless one is active. I'm not quite as interested now in developing elaborate theoretical propositions as I am in validating them in my own life."

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ANDREI SOKOLOV

And the Cosmic Artists

By F.C. DURANT III

Since the dawn of the space age, October 4, 1957, there has been an upsurge of interest by artists in this new milieu. True, there were space artists before; notably Chesley Bonestell, Robert McCall, Ludek Pesek, R.A. Smith and David Hardy to name a few. But the impetus of the first decade of space activities attracted many other artists to produce realistic and abstract works, of varying quality. In the United States an art program was established at the National Aeronautics and Space Administration by Administrator James E. Webb in 1962. This program provided an opportunity for dozens of fine artists to visit NASA centers, launch sites, aerospace firms and recovery ships to record their impressions. Much of the resulting art appeared in *Eyewitness to Space* (H. Lester Cooke and James Dean; Abrams; New York, 1971). An elegant coffee-table book of high quality, *Eyewitness* is, regrettably, now out of print. The only comprehensive collection of reproduced space art is the splendid book *Space Art* by Ron Miller, available from the publishers of FUTURE LIFE. Particularly exciting are a new group of young artists—Ron Miller, Rick Sternbach, Don Dixon, David Egge, Jon Lomberg and Adolf Schaller—who are producing works of astronomical bodies and futuristic concepts.

In the Soviet Union the best known space artists are cosmonaut Alexei Leonov and the talented Andrei Sokolov, whose work is



PHOTO: ROGER GUISINGER

Andrei Sokolov, the world renowned Soviet space artist, in his Moscow apartment.

featured here. There are other Soviet artists who have painted on the space flight theme, but their commitment to continued production of such art appears limited.

Cosmonaut Leonov is an amateur artist. He carried his sketch pad into space on each of his missions. In 1965 he was the first man to walk in space (Voskhod 2), and in 1975 he commanded the Soyuz 19 flight which linked with the Apollo spacecraft in the U.S./U.S.S.R. joint mission. Leonov has had a passion for painting since he was a youth. He has produced more than 40 works of his own using oils and, more recently, water color. On space missions he has used pastels and color pencils for sketches. On return to Earth these were used as references for more carefully delineated works. There is little free time in orbit for personal activities by either cosmonauts or astronauts. During the Apollo/Soyuz mission Leonov sketched

the U.S. astronauts Stafford, Slayton and Brand. In addition, he sketched the corona surrounding the Apollo Command and Service Module as it disengaged from the Soyuz. This was a specially arranged maneuver so that the Apollo-blocked the sun. The eventual painting in oils (see page 63) was presented to the Smithsonian's National Air & Space Museum by Leonov.

Since 1965 Leonov has collaborated with Andrei Sokolov to produce nearly 50 joint works. Leonov's personal knowledge and experience in space lend authority to their paintings. Sokolov, however, has produced some 150 art works of his own. He is an artist totally dedicated to cosmic art. His works fall into three general categories: recreation of actual space missions; projection of future space missions; and visualizations of future visits to far-off galaxies, imagined planets and contact with extraterrestrial life.

I first met Sokolov while attending the Congress of the International Astronautical Federation at Baku (Azerbaijan), U.S.S.R., in October, 1973. Coincidentally, there was an exhibition of space art being held in Baku. There was no mention of the show in the Congress program but Peter Ryan, a British journalist friend, told me of it. Later I discovered posters in several locations in the city. However, if one did not read the Cyrillic alphabet or have at least a nodding acquaintance with the Russian language, it would have been easy to miss.

In any event, I made my way to the Lenin Palace, a beautiful *fin de siecle* building with

Apollo/Soyuz, July 1975. The Soviet Soyuz (top) docked with the American Apollo spacecraft in Earth orbit—the last time Americans were in space.

F. C. Durant III is Assistant Director of Astronautics of the Smithsonian Institution's National Air and Space Museum, and possibly the world's leading space art buff.





Soviet Lunakhod 2 roved the surface of the Moon in 1973, beaming TV views back to Earth.

20-foot ceilings. On the third floor (oh, those stairs!) were some 200 works of space art. Much of the exhibit was a memorial devoted to the science fiction and fantasy work of Peter P. Fatyeev (1871-1971). Displayed were illustrations for SF stories and book jackets. Prominently featured at the entrance was a 20-foot painting by Tayir Salakhov, People's Artist of Azerbaijan and First Secretary of the U.S.S.R. Artists Union. There were sketches by Yuri Shvets made in the 1930s for the film *Cosmic Journey*. This film is best known for having employed Russian rocket pioneer Konstantin Tsiolkovsky as a consultant on the technical aspects of space scenes. Other works included those of Professor (of Engineering) Georgi Pokrovsky, Georgi Kur-nin, Vyacheslav Davidov, Nikolai Nedbailo and Gennadi Golobokov. There were paintings in oil, gouache; lithographs and posters; engravings; and unusual chased-metal works by Stasis Povilaitis and A. Burmistrov.

Standouts, however, were the works of Leonov and Sokolov.

Introducing myself to an attendant I was taken to meet Andrei Sokolov. Impressively tall (over six feet) and husky, Sokolov speaks quite adequate English. The dynamic aggressiveness which once was evident in his motorcycle racing days is carried through to his striking paintings. During talks with him I learned that he was born in 1931 and grew up in Moscow. A graduate of the Institute of Architecture, his first space art resulted from reading Ray Bradbury's *Fahrenheit 451*. For his own amusement he illustrated scenes from the book. One of these paintings was presented to Bradbury at his home in Los Angeles last year.

Sokolov and his wife Nina Lapinowa live in an attractive studio apartment in a quiet section of Moscow. Nina is a small, charming blonde and a superb cook. My wife and I dined sumptuously with the Sokolovs on our



A future spaceship explores a distant planet in this painting, titled "Is There Life?"

mission he speaks English quite fluently.

Leonov and Sokolov have produced about 20 space-theme postage stamps widely used throughout the U.S.S.R. Several sets of postcards of their individual and joint works have been issued. There have been at least four books of their art published: *The Stars Are Awaiting Us* (1967); *To the Stars!* (1970); *Roads to the Stars* (1971) and *Man in the Universe* (1976). Unfortunately, these books are most difficult to locate in the U.S., but are worth seeking in Russian-language book stores.

In July, 1976, at the opening of the Smithsonian Institution's National Air & Space Museum, an exchange show of Soviet space art was a special feature. Consisting of about 40 works, this show toured 17 cities in the United States between December, 1976 and its close in Wenatchee, Washington, in June, 1979. Solidly booked, the show attracted great interest. Included in the show were 14 paintings by Leonov and Sokolov. Other painters represented were Yuri Korolyev and Yuri Pokhadayev. There were also etchings (Emilia Glebova, Viktor Karpov, Alleks Kyutt), a linocut (Illarion Nekrasov), lithographs (Georgi Poplavski, Anatoli Yakushin) and works in chased aluminum and bronze, and hammered copper (Antimoz Georgadze, Andrei Faydysh and Yuri Chernov). Another exchange show is currently under discussion.

In a recent issue of *Art*, a prestigious and finely printed Soviet monthly, cosmonaut V. Sevastyanov has written on space art generally and about *Man in the Universe* in detail. He writes: "A. Leonov and A. Sokolov possess a keen and accurate view of things. They study inquisitively the visual information known about the universe, but they are not restricted by that which is known; striving instead for a more profound and universal living truth in the artistic expression of this new aspect of human activity. A. Leonov and A. Sokolov convey often to the viewer the fact that what



Sokolov depicts unusual optical effects resulting from enormous gravity acting on a spaceship which has landed on a planet orbiting a neutron star.

last visit in the fall of 1977. (We had been invited to Moscow as guests of the U.S.S.R. Academy of Sciences to a week-long celebration of the anniversary of the launching of Sputnik 1.) Nina had prepared a zakuska including smoked fish, and a cold eggplant dish (called Poor Man's Caviar), then borscht and piroshki, then roast meat and potatoes, then a dessert of fruit and cheese, all washed down with Russian beer and wine. Andrei drank apple juice since he was to drive us back to the hotel. The Soviet laws regarding drinking and driving are very strict! It was a most pleasant visit, surrounded by many of Sokolov's paintings, including the one which he was working on at the time. Following the Moscow visit we went on to Prague to attend the IAF Congress. At the Congress hotel there was an art exhibit of some 40 paintings by Leonov and Sokolov. Leonov greeted me in his characteristic fashion—with a great bear hug! Since his Apollo/Soyuz training and



ART. ANDREI SOKOLOV

Martian Chronicles

(continued from page 42)

But it's not as good as Truffaut's *Fahrenheit 451*, which was exquisite.

"I have reservations about this show," he says diplomatically. "The second episode has some wonderful stuff in it. The priests with the old Martians. Wonderful. And the last episode has some great things in it as well. The first two hours, however, are somewhat flat. I don't know if people are going to get through them to get to the next four.

"It's a shame, really," he sighs. "I warned them about cutting things too short. They've lost a lot of meaning. In the story of Ylla, they cut the song that she hears in her telepathic dream. That song is very important. It's a metaphor for the arrival of the Earthmen. Now, when you see the first episode, you're wondering what's going on. The Captain Black sequence is fine up to a point. Then, they ruin it. They've made up an ending which just doesn't work.

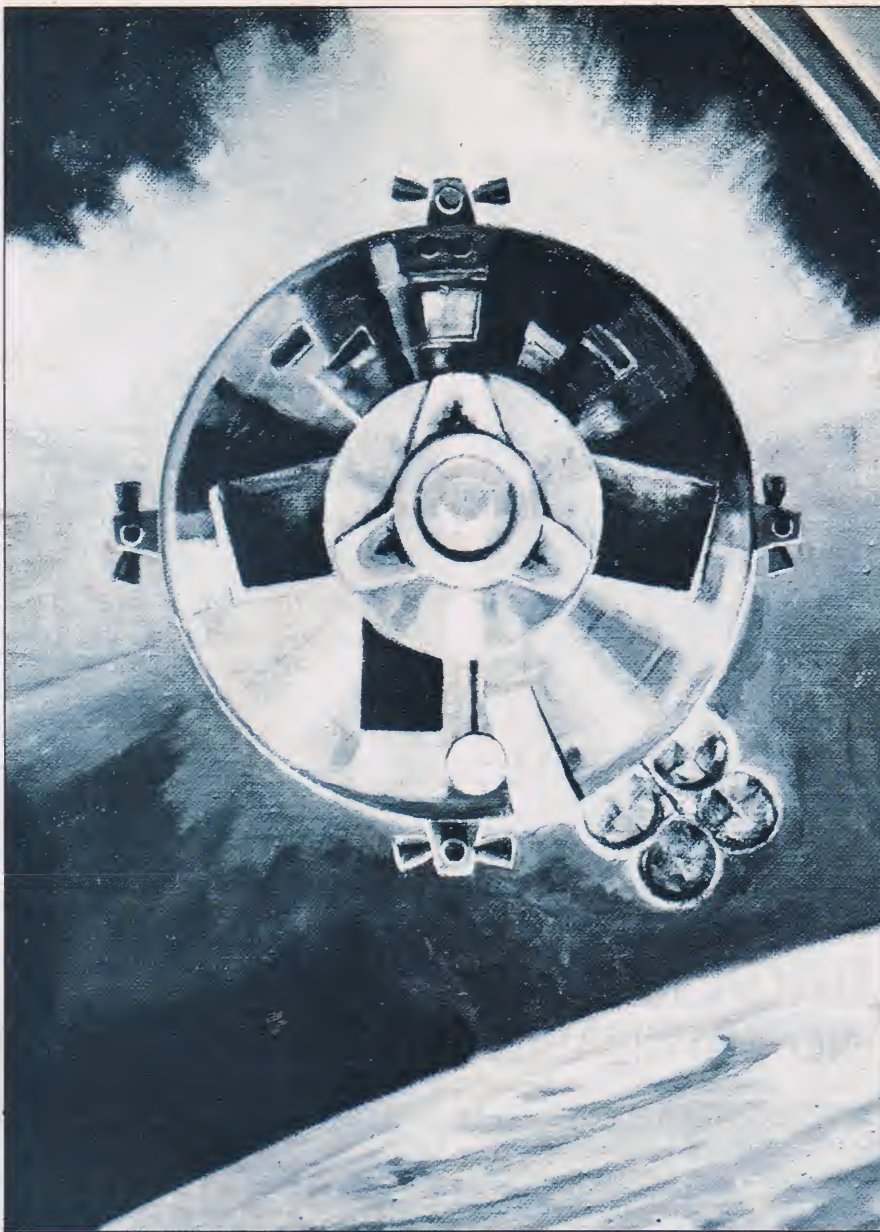
"But some of the actors are very fine: Fritz Weaver is incredible, so is Maria Schell and Roddy McDowell. And the young man who plays the Martian Christ is tremendous. The Martians themselves are beautiful. There's an encounter with Rock Hudson and a Martian, based on the story 'Night Meeting,' that's very moving. The actor playing the Martian is awesome. His eyes are golden and when he turns his head, flashes of golden light sparkle across the screen. Breathtaking. There are moments like that throughout the whole film, where, all of the sudden, the production takes on imagination and meaning and life. I just wish there were more of them... that's all."

Bradbury smiles enigmatically. "I'll never have anything adapted for the screen again unless I have total creative control." Catching himself in a verbal downward spiral, he rallies with a grin. "But the finished show is certainly a pleasant experience."

Bradbury is pleased with the producers' approach to his work in this respect: They haven't tried to update his story in terms of present-day knowledge of Mars and scientific technology. The finished work echoes the original book's sense of fantasy... which is as it should be.

"The reality of Mars doesn't upset me in regards to the book," Bradbury says. "I was writing a Greek or Roman myth, not a scientific piece. The Greek and Roman myths are still with us today, aren't they? Even though we know that there are no such things as Greek and Roman gods. Olympus is empty but we repopulate it every year, don't we? So, that's the way it is with my Mars. No matter what happens in the future, my Martians will always be there. Years after we have manned outposts on that planet, the myth about those Martians up in those hills will go on and on."

Bradbury allows his words to trail off. His cluttered den-office is suddenly filled with a special, otherworldly magic that will simply never be captured on the screen, small or large, no matter how many millions of dollars are spent in the effort. "Just tell them it's a good show," he repeats one last time.



ART: ALEXEI LEONOV

Above: Cosmonaut Leonov paints the corona seen around the Apollo spacecraft as it pulls away from the Soyuz with the sun at its back (based upon a sketch he made in orbit). Leonov donated the painting to the Smithsonian's Air and Space Museum. Left: A Soyuz launch, becoming a routine event. As of last July, ten such launches have carried cosmonauts to the USSR's Salyut 6 space station orbiting Earth.

exists in reality is insufficiently expressed in the camera, the telescope, the immediate view of man. The emotion of the artist, the activity of his vivid perception is contained in each artistic work." Sevastyanov comments on the stimulation of art which extends man's aspirations of travel to the stars and beyond, to discover the barely imaginable views of the cosmos, of strange planets and possible life forms. Now that artists have painted where spacecraft and man have traveled, is it not logical to continue this imaginative journey to those far distant points where one day mankind will go? He relates that the cosmonaut corps shares these romantic views and ap-

plauds Leonov's and Sokolov's art.

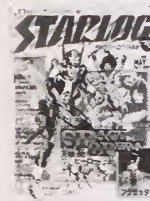
The carrying of two of Sokolov's paintings (*Cosmic Morning* and *Over the Aral Sea*) to Salyut 6 during the record-breaking Soyuz 28 mission was another Soviet "first" in space. In retrospect it may be recognized as a small step toward Jesco von Puttkamer's concept of "the humanization of space." With the advent of space shuttle operations, it seems only a matter of time before professional artists will have the opportunity to actually create their works in orbit.

Such is the dream of Robert T. McCall, who has been dedicated to space art for more than a dozen years. He states, "Of course, I keep thinking of the thrill of observing from and painting in orbit! The possibility of an artist in space within five years is very real. I am personally making every effort to keep physically fit and would be ready if my request is approved by NASA."

Millions of us earthbound travelers can look forward to the pleasure and excitement of fine art created during long duration flights and, eventually, in space stations and in a lunar base.

Starlog Goes Japanese

STARLOG now has a very special Japanese language edition, chock-full of rare color stills and Japanese SF news. STARLOG, published in a format you've never seen before, features bold Japanese graphics, with fantastic full-color, pull-out posters in every issue. Packaged in a plastic, laminated cover, the Japanese STARLOG is a visual treat for all SF collectors and enthusiasts.



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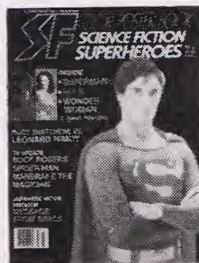
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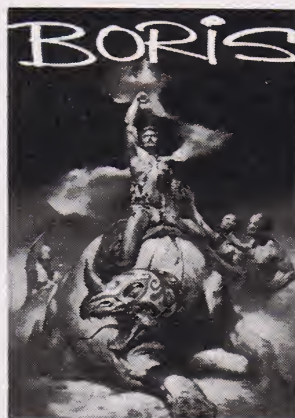
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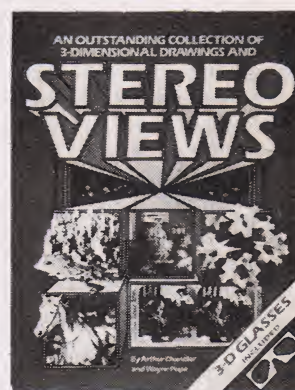
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Mars In '88

(continued from page 25)

Mars expedition would be the establishment of space-based construction camps. The construction site theme is integral to NASA's plans for the 1980s, for the building of communications platforms, manufacturing plants and ambitious projects like solar power satellites (SPS). In fact, the SPS concept incorporates orbiting propellant depots, construction worker habitats and a wide variety of space capabilities that seem to make the reach for Mars pale in comparison. In fact, all of NASA's practical plans for the 1980s will, indirectly, contribute to making any Mars project more affordable.

How to propel an expedition to the red planet remains a technological multiple-choice question. A recent appraisal of propulsion systems by the American Institute of Aeronautics and Astronautics (AIAA) suggests a host of choices, including electric, solar sailing and plasma-core nuclear engines. All these options need further study before they power human cargo on interplanetary voyages. Chemical propulsion stands alone as a proven power source, ready, willing and able to deliver humans to Mars.

One scenario involves a series of shuttle flights lifting pieces of the central core of an expedition—the science/decontamination stations, living quarters and recreational and exercise compartments. Once interconnected, subsequent shuttle flights would attach propellant tanks to the core vehicle. This method has already been outlined by Rockwell International as a normal outgrowth of the space shuttle's potential.

Those propellant tanks may already be full, or they might be gassed up by an orbiting propellant depot. If 1980s space activity is as feverish as some predict, Mars explorers may have to wait their turn in an orbiting fuel line!

With large quantities of chemical propellant at hand, it is plausible to attempt a powerful, high-energy thrust to Mars. This type of flight would use an "aero-capture" technique, skimming the Martian atmosphere, then firing retro-rockets and braking the spaceship into a stable orbit around Mars. Travel time for the express lane planetary trip? A short three to four months.

James Pelouch, Director of the NASA Lewis Research Center's Propulsion System section in Ohio, foresees another helpful chemical additive for Mars journeys. Pelouch believes that refueling buoys, previously anchored along the route to Mars, could allow a Mars team to reach the planet in record-shattering time—perhaps under a month.

Yet another weight and money saving thought is to actually manufacture the fuel needed for the trip back to Earth *while on Mars*. Studies by JPL mechanical engineer Robert Ash, along with several colleagues, infer that a fuel-producing station might be situated near Mars' northern polar region. A robot factory there could suck in quantities of Martian atmospheric carbon dioxide, mix it with soil moisture and, by adding a spark of electrolysis, produce methane and oxygen for propellant fuel. The fuel plant would also churn out such abundant volumes of oxygen and drinkable water, that these life-nourishing assets could be stored for use by extended Mars expeditions.

Barring speedy flights to Mars, work is also proceeding on controlled, long-duration ecosystems, in which all elements to support human life can be recycled and replaced without a periodic supply of consumables. NASA is now studying closed ecosystems for space station use, but the same principles could be upgraded for planetary missions.

Once an expedition reached Mars orbit, astronaut teams could be dispatched to the surface on a routine basis, similar in concept to the Apollo Moon landings. In addition to a month or more of human surface expeditions, scientists on the circling mother ship would deploy a number of probes, including a virtual "Mars air force" of remote-controlled, camera and instrument-laden robot airplanes. Devices called "penetrators" would be fired into the soil, spreading across the face of Mars and acting as a sensor network to relay continuous scientific information. Soil samples could be brought up—first by robots and then by humans—for detailed study in the ship's decontamination facility.

Such a complement of human and mechanical research—the humanation of Mars—would tremendously enhance our knowledge of the red planet, supplying data far superior to that provided by lonely robot sensors. Such a complex mission plan is, at

best, sheer speculation. But a review of existing technology, space construction skills and the widespread desire for follow-up investigations of Mars lead inexorably to one conclusion: It's time to organize the first human interplanetary flight.

The Mars Co-op

Could Mars, the Roman god of war, be transformed into a target that would foster peace on Earth? In the event that a Mars project proves too costly for one nation, a Mars co-op of spacefaring nations would assure that no single country would bear the entire cost. The world now owes the U.S. over \$70 billion in repayments for aid programs and loans. Could participating nations reimburse the U.S. with needed manpower, hardware, science planning, astronaut training or data evaluation toward the common goal of reaching Mars?

Since recent studies reveal that the world is catching up with U.S. technological superiority, such countries as Japan, France, India, Germany, Canada, the Soviet Union and even China might contribute their burgeoning space expertise. A global, anti-militaristic Mars project would certainly make far better use of the half million scientists and engineers who now spend billions of dollars a year on world weapons research. The new U.S. MX missile, just approved by President Carter, tallies \$30 billion alone. Mars as a scientific goal for a world space project would avoid the potentially divisive pitfalls of certain aspects of space industrialization.

In reference to a Mars landing, Wernher von Braun once said, "I say let's do it quickly and establish a foothold on a new planet while we still have one left to take off from."

Once we've gained that foothold, that distant world will represent a "home away from home." Inevitably, initial travels will spawn small Mars bases, later evolving to permanent housing. When our species has occupied this second niche in the solar system, a transformation of the planet will be conceivable.

A NASA evaluation of altering Mars to suit human life—terraforming—came to the conclusion that a complete climatic change-over might be accomplished over a time span of from 10,000 to 100,000 years. But graduate students Chris McKay and Penny Boston, heading the University of Colorado's Mars



The first photograph taken on the surface of Mars: How long will we wait until a human foot stands next to that of the robot Viking?

Study Project, have taken a more optimistic view. The researchers claim their models of planetary engineering would lead to 100,000 people living on Mars within 50 years!

The Mars Underground

Not surprisingly, the most vocal support for human excursions to Mars comes from outside NASA. A lone political voice for rekindling a Mars commitment is that of Senator Harrison "Jack" Schmitt, the last man to walk on the Moon. As a former astronaut-scientist, Schmitt has formulated an impressive 30-year progression of space activities dubbed "The Chronicles Plan" (see *FUTURE LIFE* #11, July 1979). With those 30 years, the Senator calls for the establishment of a Martian settlement and concludes, "The parents of the first Martians are among us now."

Veteran astronaut Donald "Deke" Slayton, now managing the orbital flight test program for the space shuttle, presents a different view. "I'm a little more optimistic than Senator Schmitt," Slayton grins. "I think the first Martians are with us today." Slayton contends a Mars expedition can be accomplished only seven years after a commitment is made. "All the technology is currently available," adds the astronaut.

As you read this, a small clique of maverick space enthusiasts, both in and out of government, are finalizing the detailed assessment of a proposed Mars project. The modest and secretive clan can only be described as a "Mars underground," led by a character reminiscent of Impey Barbicane, the spaceflight ring-leader in Jules Verne's *From the Earth to the Moon*. "The concept will not be a stunt and is cost-effective," states the planning leader. The price tag? A rock bottom \$10 billion. Readers can expect to be hearing details in upcoming issues.

The Calling

Is Mars the Apollo program for a younger generation? Perhaps Dr. Edward Ezell, a space agency historian, states it best. "The future has been closed out on us," Ezell laments. "We need the goal of human missions to Mars... for the sake of the human spirit. The absence of enthusiasm for planetary or other exploratory adventures now in 1979 does not mean that in 1989 or 1999 or some other decade, individuals will not want to visit the planets. Let us not destroy the dream simply because we do not wish to pursue it ourselves."

In September of 1988, Mars will be a mere 36.3 million miles from our planet. Every 15 to 17 years, the red world swings to this close proximity before retreating to a more distant point—over 240 million miles from Earth at its maximum. With the current straight jacket we have placed on our motivation and will, human travel to the red planet will be relegated to the future—perhaps well into the next century. This need not be.

The robots have blazed the trail. It is time we proclaim our place among the planets. The blueprint for a human visit to our planetary neighbor can now be drawn. Why wait? Mars in '88!

H.G. Wells

(continued from page 30)

authentic drawing of the period, and I think eventually I'm going to take it and grow geraniums in it on my front lawn."

It is obvious after talking with Meyer for any length of time that making *Time After Time* has been a labor of love.

"I can truly say that working on this film has been the most wonderful fun that I've ever had in my life. The crew was wonderful, the cast was fabulous... One of the strangest things about working on the film was that often I was going about certain things in total ignorance, which probably helped a lot. For example, if I wanted to get some kind of particular effect, I'd inevitably be told it couldn't be done. Because I didn't know any better, I'd ask 'Why not?' And then people would come back to me and say, 'Wow, it can be done after all!'"

"There was only one exception to this, and it concerned a location I particularly wanted and couldn't get. But apart from that, everything about this film has been positive. I think being a writer helped me, especially after the actual shooting was completed and it was time to edit. A lot of people don't like editing, but through my writing, I'd learned that rewriting is one of the most necessary and rewarding parts of the process, and I just transferred that feeling to editing."

Meyer's credits as both writer and director on the film mean that he has now fulfilled one of his longest held ambitions: directing.

"I've written screenplays and books most of my adult life," explains Meyer, "but what I really wanted to do was direct. I'd directed plays earlier on in my life, but then I got involved in other things, and so directing this film is like coming to the end of a decade-long detour!"

Although he now lives in the Laurel Canyon district of Los Angeles, Meyer's home looks much more like a New York brownstone—not all that surprising considering he was born and raised there. He described himself as having been a misfit at school, with few friends and less than stirring grades.

"I suppose because I was a loner, I turned to other forms of companionship—which for me was books, films and my phonograph. I did have a small taste of acting when I was about 12, when I had a part in *Around the World in 80 Days*, but that was about it.

"I finished school, went to college, and then my first job was a publicist for Paramount Pictures. From there I went to being unit publicist for *Love Story*, and there was always my own writing. But now I feel I'm doing what I really want to do, and hope to keep on doing it."

Meyer's next project is already decided: another movie, but this time the subject will be, in Meyer's words, "magic, murder and madness." He's working on a screenplay of a book called *Fifth Business*, written by a Canadian author called Robertson Davies.

"And there's no science fiction connection at all," laughs Meyer. "I take the stories where I can find them!"

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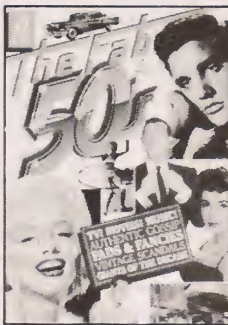


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A.E. van Vogt is, admittedly, a writer obsessed by systems, rules and logic. Beginning his very prolific science fiction career in 1938, van Vogt found that he could write best while adhering to a fairly cerebral literary system. This concise, rigid style has made him a center of controversy, his work being both praised and derided as "enigmatic" and "intellectual." The value of his work, however, cannot be denied. Over the years he has penned such well-known tomes as *Slan*, *The Weapon Shops of Isher*, *The World of Null-A*, *The Voyage of the Space Beagle*, *Destination Universe*, *The Darkness of Diamondia* and *Children of Tomorrow*. A California resident, van Vogt is now working on a screenplay for New World Pictures.

War = Peace

By A. E. VAN VOGT

Somehow, our vision of war in the future has always been one fraught with marvelously powerful energy weapons. Automatic, computerized mobile machinery is always involved. Defenders are traditionally huddled safely in underground, self-sufficient cities or behind walled enclosures of virtually indestructible metals or crystals.

There is undoubtedly a small amount of truth to be found in such a scenario. As Ben Bova pointed out in this column a few issues ago, laser weapons are currently being developed that will be science fiction death ray fantasies come true.

But the reality of the warfare situation is that, today, we are watching, by way of our news and TV media, the *real* warfare techniques of the future evolving. The war of the future will not be a cataclysmic event but, rather, an ongoing skirmish.

The key controlling factor in preventing total armageddon is and will continue to be the hydrogen bomb. At present, the two great super-powers, the U.S.A. and the U.S.S.R., possess these ultimate weapons; ultimate in that they can destroy civilization in one, long, hellish day.

But, as we can readily observe, at the helm of both countries are "reasonable" men who see the danger and the folly of a nuclear confrontation. As a result, a major war between these two countries cannot occur in any historical sense. "War" requires an "enemy" to be overwhelmed. Somebody wins and somebody loses. The peace terms are dictated by the conqueror and he occupies the enemy capitol. Before a super-power will permit enemy encroachment today, it will resort to nuclear weaponry. About 100 hydrogen bombs dropped on European Russia or the U.S. part of North America would do the job... quite un-nicely. No winners, just losers. Theoretically, with that realization in mind, the top leaders of the world should have ended not only the threat of nuclear war, but all types of warfare by now. They haven't. And they won't.

The war of the future is in continuous progress today.

At present, a large number of small countries are involved in idealistic battling. Watching from afar via television and newspapers we can only pity the small countries of Africa, Asia, the Middle East and, periodically, South America. We can only shake our heads and sigh over the ever-present, old-fashioned ideals which motivate the people of these tiny countries to act against the differing ideals of equally obsessed small neighbors.

But the future of these small countries is of much more serious concern than their own "madness." Their overt wars are, in reality, covert displays of super-power strength. They have become the arena wherein the U.S.S.R. and the U.S.A. will be furnishing the weapons for internal and neighborly battles that will not end in the foreseeable future but, then again, will never escalate to the point of nuclear confrontation. These small countries' wars will be puppet wars, orchestrated by super-powers locked in covert combat. It is in these small countries that the sophisticated weaponry of the future will be tested; not within the borders of larger affluent nations.

Writing this column, I am assuming that we all know something about the current status of weaponry: the super fast jets, the missiles with chemical explosives, the rapid-fire cannon, the rocket launchers which small ground crews can operate, the poison gases, the capability of chemical destruction of forests and crops. (As early as World War I, primitive versions of these modes of warfare slaughtered up to 100,000 men a day.)

In the near future, oil-rich small nations, always imperiled by foreign intruders, will probably be in the market for a modern defensive system developed by a major aircraft company. I was shown a patent description of it a few years ago and, as a consequence, wrote a science fiction novel, *The Anarchistic Colossus*.

The key device in this system is a Kirlian sensor that reacts through computer programming by discharging a weapon. We may

postulate that the weapon will be a super laser. These will be utilized in long lines of recessed bunkers. They would rise up one after the other as an invading force moved across the border or into a city. The defending forces would merely monitor the invasion from a safe underground haven without risking a single defensive skin. Future war will be subtle, leading to a number of new weapons.

Coming up: A particle accelerator which can be aimed at missiles like a searchlight. Meaning: it can't miss. When it's on target, it will heat up the chemical that sets off the bomb. It will blow up far from its target.

Coming up: A time when small countries' bigwigs, when stricken ill, will be invited to one of the super-powers' medical centers for free hospitalization and surgery. Micro-processor implants covertly inserted during the surgery will 1) make it possible for remote listening devices to hear everything said by or near the individual, 2) inject a hypnotic drug into the bloodstream at a key moment so that, during a conversation with a super-power operative, the patient will obey every command, and 3) include a device that can be triggered to go into white heat and kill the victim when the need arises.

Coming up: In my novel *Slan* Jommy Cross had a weapon with which he could direct a beam at any object—a large rock, a steel tank, etc.—and trigger them into nuclear reaction. I hope I wasn't prescient, but it's my guess that laser technology will be doing this in the near future.

Coming up: A lot of consciousness-mangling chemicals arriving in the Middle-East, South America and Southern Asia. They will be dumped into the drinking waters of cities and other areas where localized religious fervor is making the U.S.S.R. nervous. The U.S.A., of course, may retaliate with sophisticated counter-drugs.

"My God!" you exclaim. "Is it all going to be that grim?" The answer, my friend, is that for those of us in the U.S.A. and the U.S.S.R. and other developed nations, future warfare isn't going to be that bad at all. In fact, your principal pain might be a slight twinge of guilt as you read about these developments occurring around the globe.

The mini-war I have described is a strictly limited disaster, affecting only a small percentage of the Earth's population. Our future American may live out his full life span only vaguely aware of the small wars in Africa and Asia. What he will see, in fact, will be an *improvement* in world peace when compared with humanity's large-scale murderous global past.

Keeping the future war limited in scope will be, again, the hydrogen bomb. The former powers of the world, Britain, Germany, France, Italy, Spain and Japan will be forced into a position where they will maintain armies entirely for self defense. It would take



An American F-18 attacks a Russian-made fighter. In the mini-wars to come, super powers will supply weaponry to small nations.

only one or two hydrogen bombs to devastate any one of them and so they can never again engage in aggression.

Of course, covert future warfare will lead to quite a few grim by-products. Terrorists, for instance, will play a greater part in warfare. In the concept of *official* terrorism, we have the secret armies of the future. This is how the middle-sized countries, like Britain, Japan and France can wage war successfully without getting slapped down with a hydrogen bomb counterattack.

Visualize this situation: France wants a favor from the U.S.A. A newspaper editor, a key congressman and a business tycoon object to their request. Within a week all three are assassinated. And since it's logical to expect that the Euro-nations will all work together in the future, the actual assassin employed by France may be a West German or an Englishman, thus making pursuit even more difficult.

"But is there no hope to end war?" you wonder. "Will things ever get better?" Well, it is indeed possible that, sometime in the future, all warfare may cease. The real solution to war lies in the expansion of consciousness in all those obsessed, small countries. We have to help the global citizen transcend tribal thinking.

To that end, I have heard that someone in the United States State Department, who has some high level Middle East contacts, has proposed translating science fiction into all those dialects. We may also expect that the fast success of current science fiction films may introduce into dark minds the bright ideas of space, exploring other planets and scientific progress in general. Of course, there is always the real space program to focus on, which makes "progress for all humanity" a reality.

As if on cue, humanity has already begun a search for a way to expand its consciousness, in varying degrees and in various forms. The late playwright, Eugene O'Neill, who declared God dead, would probably be interested to know that He has recently been revived around the world. The Ayatollah Khomeini has brought Him back to political life in Iran. In the U.S.A., millions of young people are investing their time and money in countless pop religions and self-help movements in an attempt to elevate themselves from a world they consider less than ideal. Once part of a movement they, in turn, attempt to entice their close friends and family to join in. What I'm pointing out is that universal consciousness is going to expand even if it's not through the influence

of science fiction ideals.

Perhaps, some day in the not-too-distant future, peace will come through a new religious or philosophical fad. Coming up: A new religion based on cloning. As the Russian and American planes, cannons and lasers sway back and forth across the borders of countless small arena countries, the promise of immortality inherent in cloning may make both the contestants and the victims pause for a long, startled look. Even our futuristic counterparts, reading about the endless, foolish, deadly fighting going on while they ingest their chemicalized breakfast cereal, may find themselves taking a second look at the possibilities of duplicating that valuable "self" by way of cloning in a peaceful society.

But until that day when humanity can rise above conflict, the war of the future will continue to remain ever-constant and ever-small. It has been said at various times during history that, if everybody believed in God, the world would immediately change for the better. We are now entitled to re-evaluate that concept in light of the fact that, in the future, because of the threat of nuclear power, global warfare will actually *dwindle* both in size and scope.

Could it be that in His latest incarnation, God is a hydrogen bomb?



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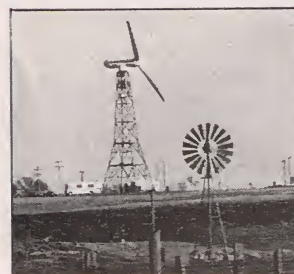
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Science fiction is coming to Public Television this season. Touted by PBS as "the fiction of the future," SF will make its presence felt in a big way via a two-part \$740,000 telefilm version of Ursula K. LeGuin's *The Lathe of Heaven*. The tale of a young man who can alter the shape of the world's past, present and future by merely dreaming, *Lathe* is PBS's most daring excursion into original drama to date. Next issue, FUTURE LIFE goes behind-the-scenes and reconstructs the evolution of an experiment in TV SF.



THE NEW ENERGY

Gas is expensive. Oil is running low. Coal pollutes the air. Wood is getting rare. Where will planet Earth find new sources of energy to replenish her currently dwindling stockpile? Science fiction author Harry Harrison examines the problem and comes up with an optimistic scenario which features not only solar power but water, wave and wind power as well. And then, there are the vegetable fuels . . .



METEOR

American International Pictures has high hopes that their forthcoming scientific disaster film, *Meteor*, will be a smashing success. In the film, the Earth is imperiled by a collision-bent space rock big enough to level several major cities. The film's producers are labeling their scenario science fact . . . but is it? Next issue, both the science fact premise and the scary science fiction special effects of *Meteor* are profiled . . . with startling results.

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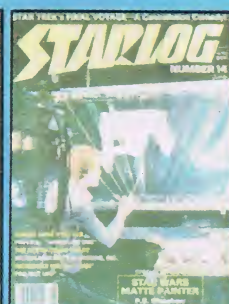
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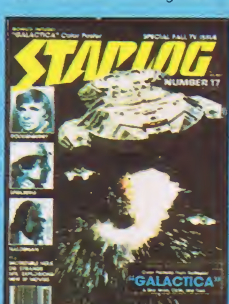
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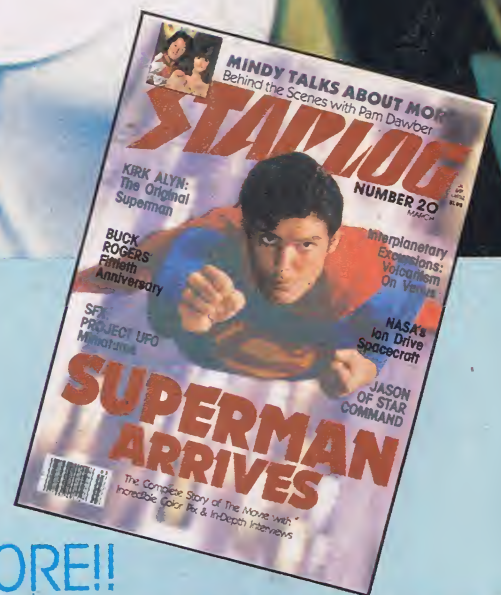
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